



A DESCRIPTION  
OF THE  
BODY OF MAN

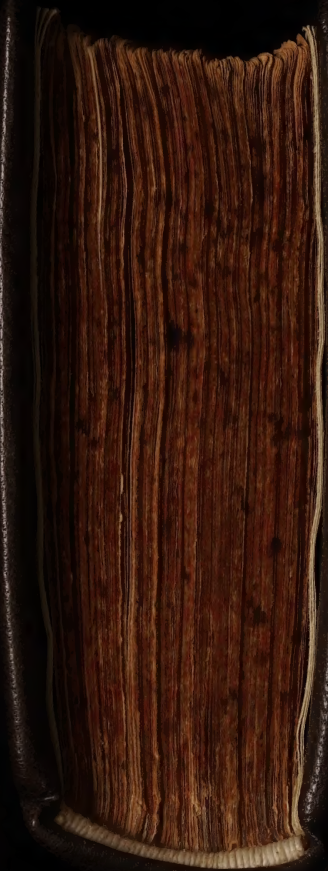
PERENGARIUS

1664

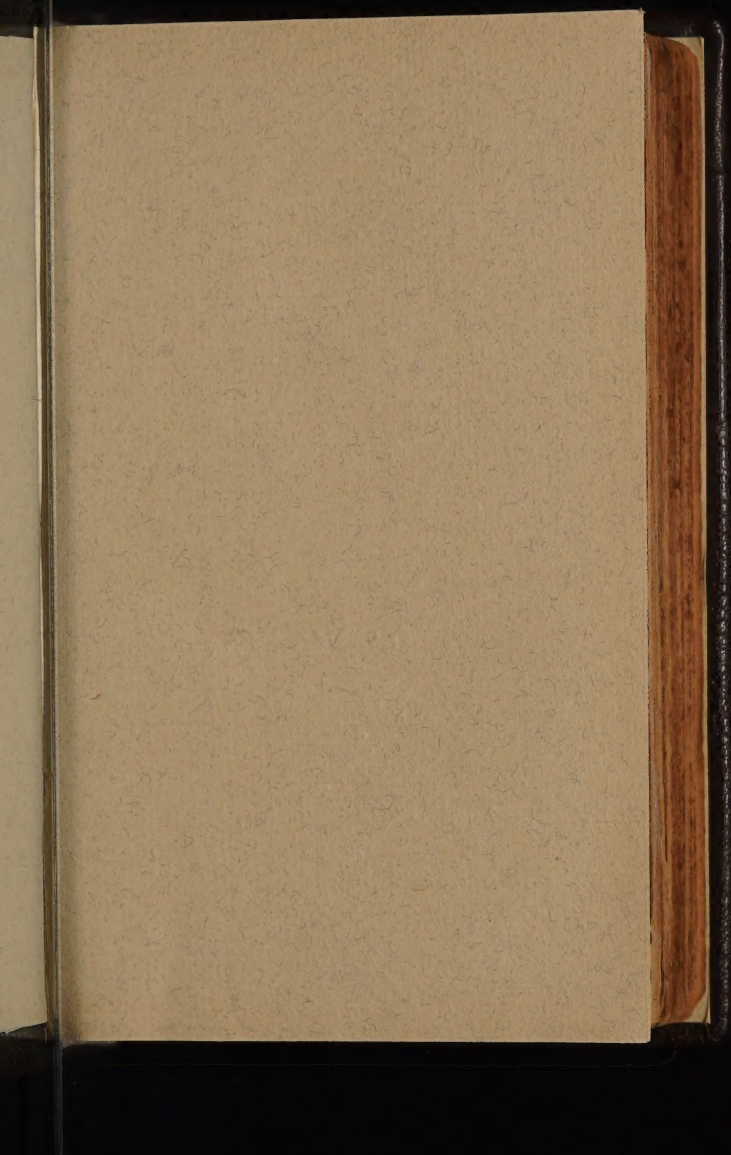


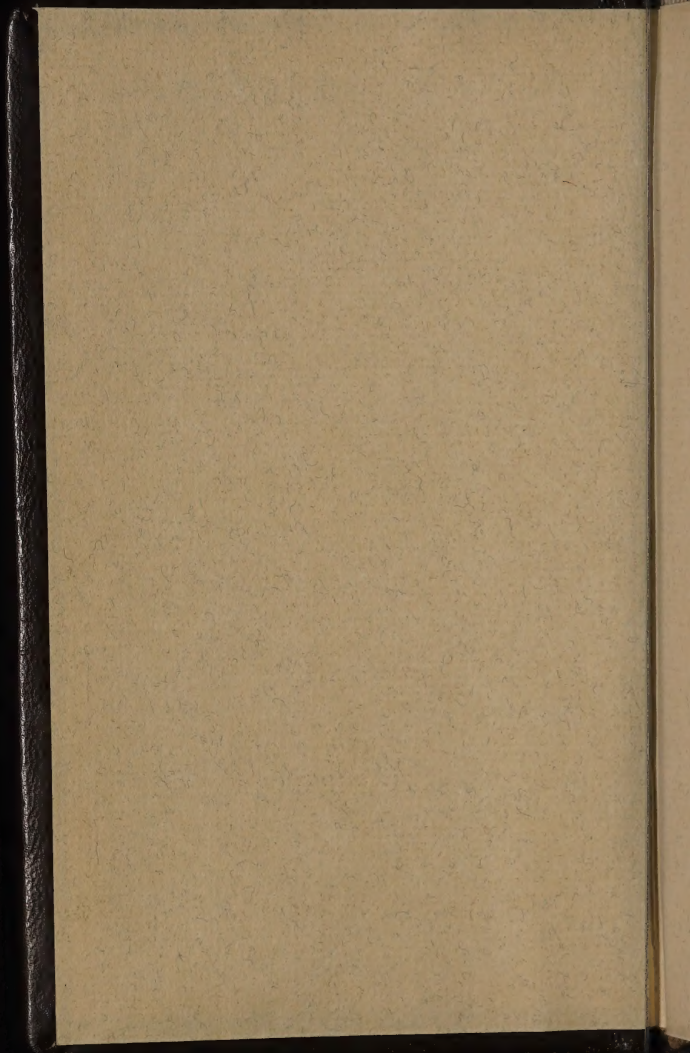




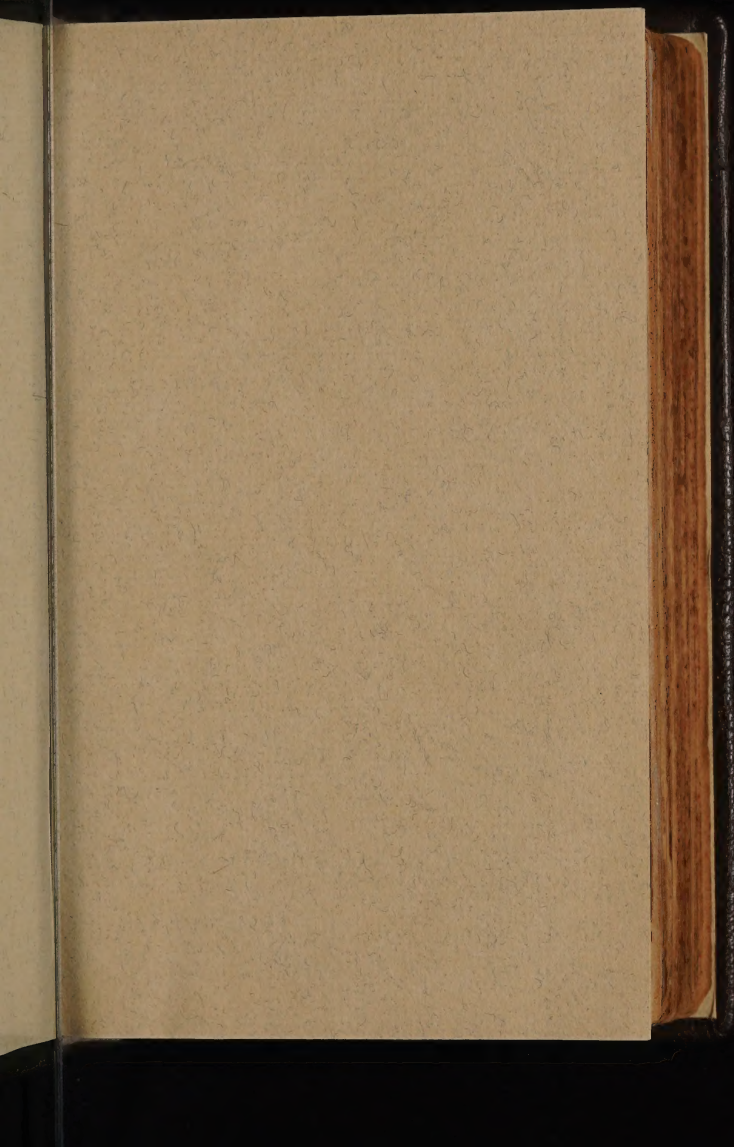


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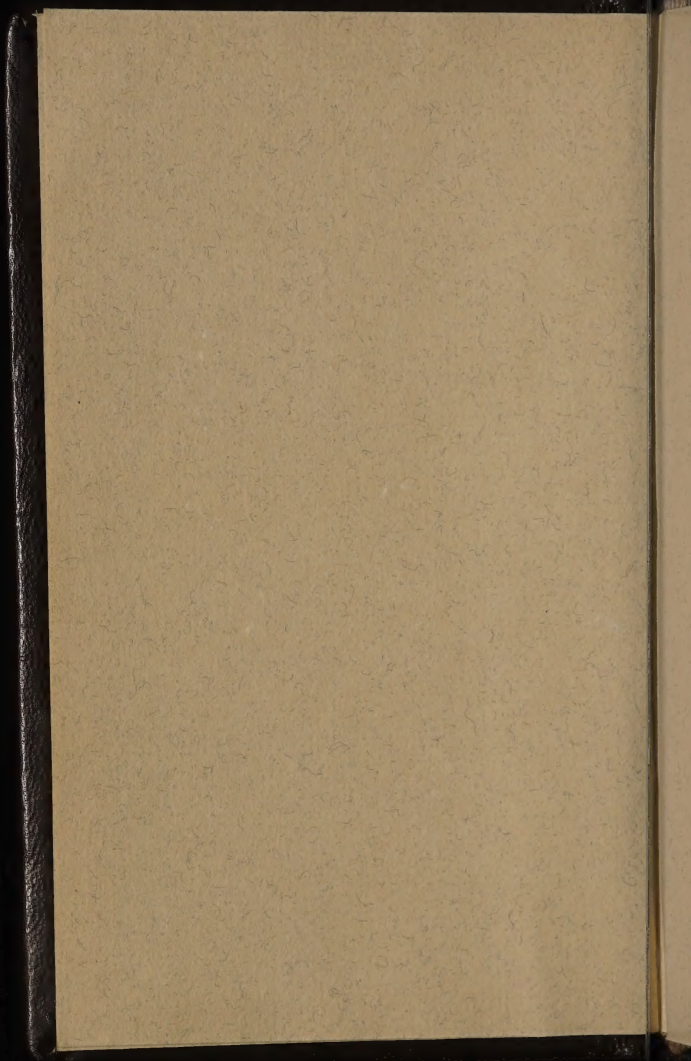


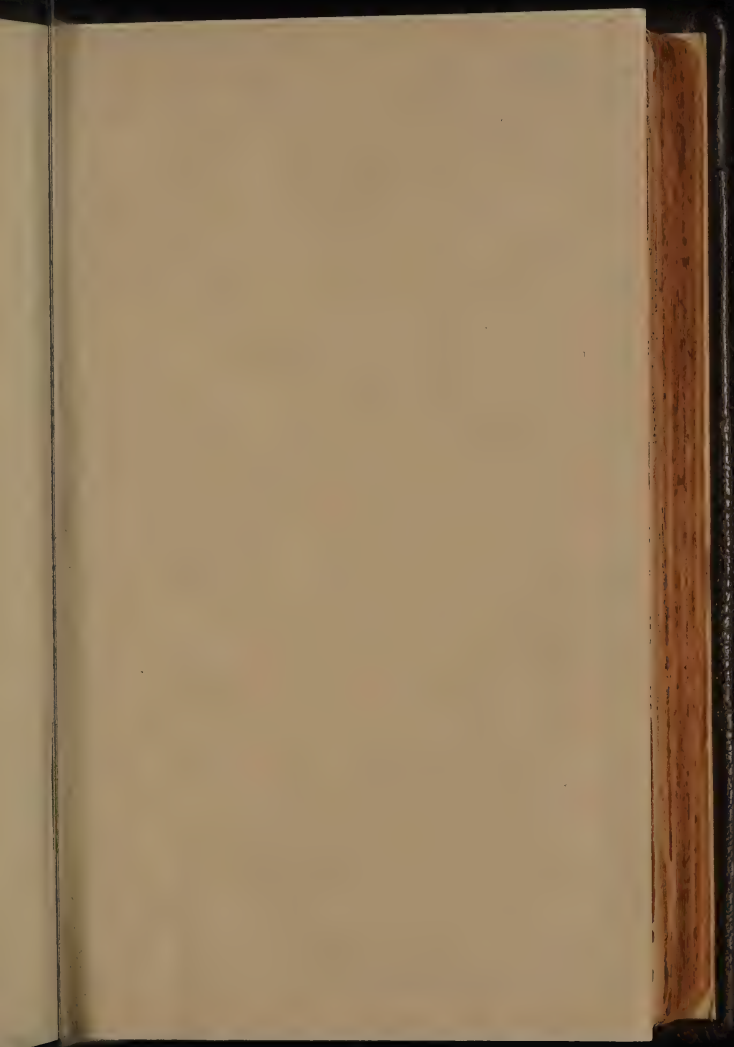


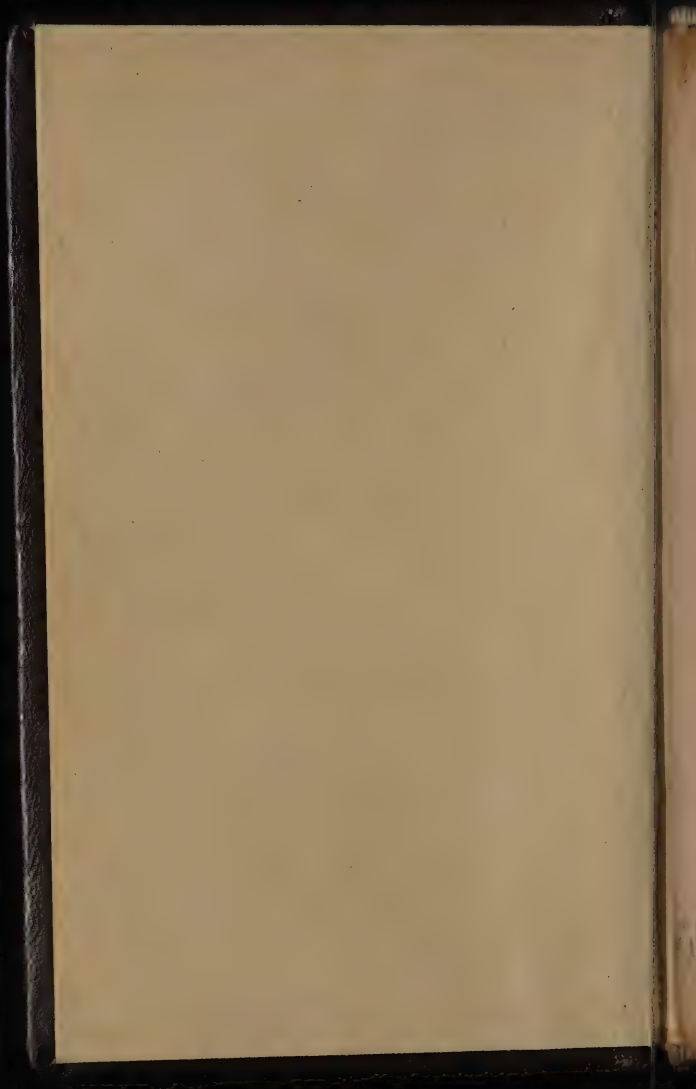








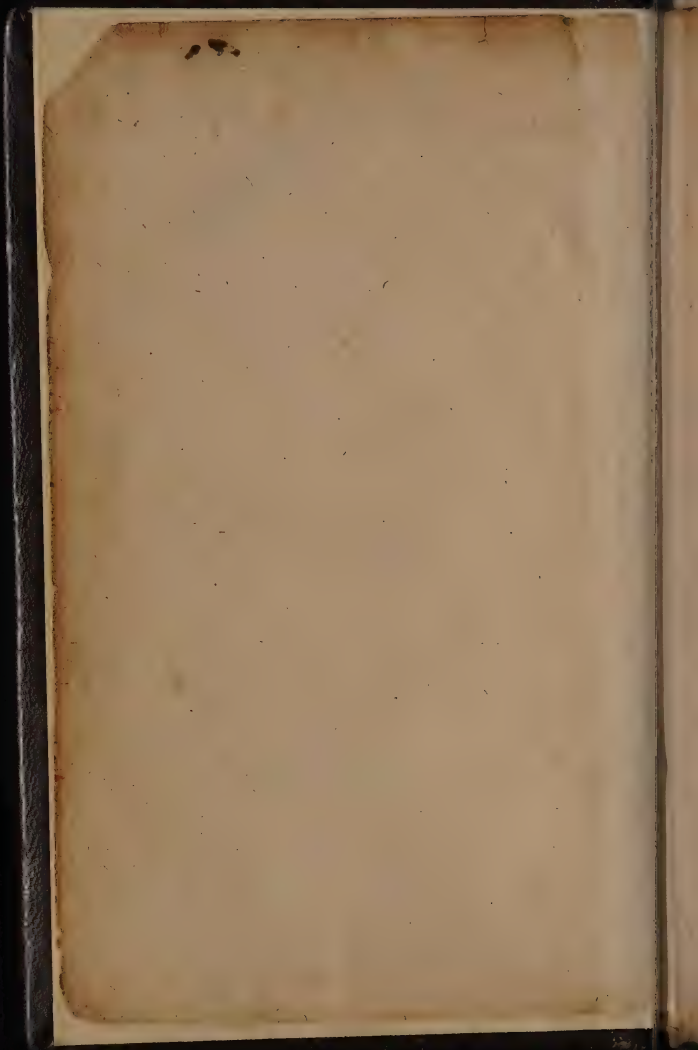




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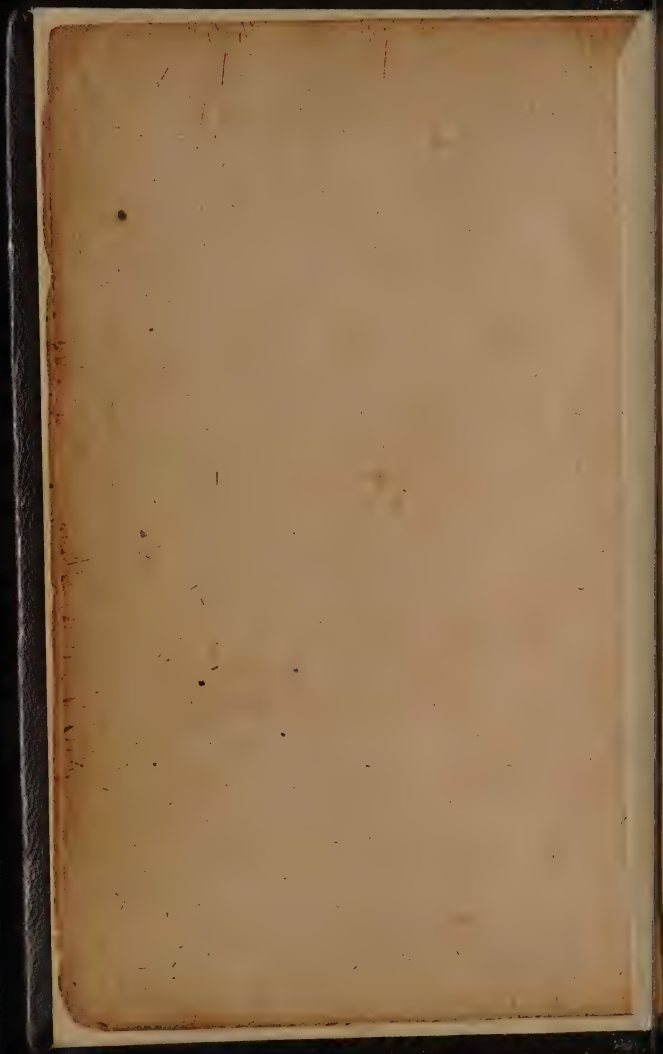
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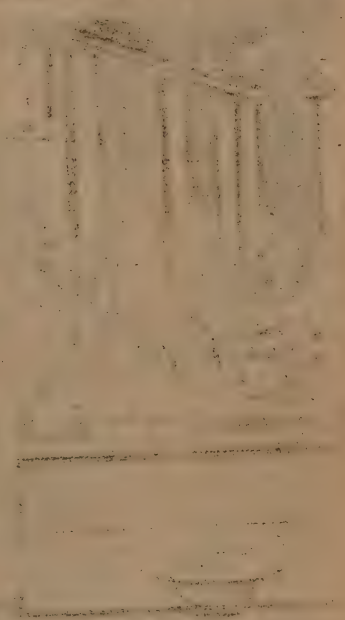








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Μικροκοσμογραφία  
or  
A Description of the  
LITTLE WORLD  
or BODY of MAN



ΜΙΚΡΟΚΟΣΜΟΓΡΑΦΙΑ:  
OR, A  
DESCRIPTION  
OF THE  
Body of Man:  
BEING A  
Practical Anatomy

SHEWING  
The manner of Anatomizing from Part  
to part; the like hath not been set  
forth in the English Tongue.

Adorned with many demonstrative Figures  
Long since Compos'd in Latine, by that  
Famous *J. Berengarius of Carpus*, Dr. of  
A. & P. Reader of Chirurgery in  
the University of *BONONIA*.

Done into English by *H. Jackson* Chirurgeon.  
By whom is also added a fit Etymon to  
the Names of the parts, in their  
proper place.

---

London, Printed for *Livewell Chapman*, at his  
shop in *Exchange Alley* in *Cornhill*, 1664.



DESCRIPTION  
OF THE

Body of Man:

English Anatomy





T O  
The VVorshipfull  
Society of the Mystery  
and Commonalty of *Barber-  
Chirurgions* of *London*, together  
with all Students and Practitioners in  
*Anatomy*, *Henry Jackson* a Member of  
the aforesaid Society commendeth these  
his Labours.

( *Most renowned Brethren,  
and Friends :* )

**I** Am provoked in my  
mind, after long deli-  
beration, to publish  
this Work, being commanded  
in my first undertaking there-  
unto, by my aged Father, an  
ancient member of this Society,  
who having met with this Au-  
thor in his Travels in *Italy*, e-  
steemed it as a great Treasure,  
and too good indeed to be con-

### *The Epistle*

cealed ; which being in old and curt Latine, cost me not a little pains to put it into smooth English ; and yet I never over-read the Work but I had comfort in it, and thought it worth all my pains. I have also been much encouraged by the commendations I have heard of the Book, by the learned Dr. *Guinn*, and Dr. *Andrewes*, in their publique Anatomy Lectures at our Hall, as also by that exact Anatomist Doctor *Wharton*, who hath had the perusing of it, and is pleased to prefix his Epistle to it. And now considering the great want there is of such a Work, that may be as a Directory to young Practizers in Anatomy, how to dissect from part to part, and how studious most ingenuous men are of this Art ; as also how mysteriously those that  
have

*Dedicatory.*

have it doe conceal it, I am, I  
say, provoked to thrust forth  
this Work into the world; by  
the help of which for the three  
Venters and general parts, and  
Muscles of the Body of Man  
and Woman; as also by a little  
Treatise of Master *William*  
*Molins*, of the Anatomical  
Administration of Muscles,  
which hee calls ΜΥΕΚΟΤΟΜΙΑ,  
(which I also commend to the  
industrious Practitioner in A-  
natomy) I am not ignorant  
what a great light of experience  
may bee gained to the diligent  
hand of such who doe industri-  
ously labour in this Science. I  
have also added a fit Erymon  
to the names of the parts in  
their place, from diverse Au-  
thors, besides those inserted by  
this Author, because it is both  
pleasant and profitable, and  
customably observed in Ana-

*The Epistle Dedicatory.*

to my Lectures. By the help of which Book, I am of opinion, that the ingenuous Chirurgeon may be enabled, not only to Dissect from part to part, but also ( where more excellent Physicians are not to bee had ) to explain and read upon the parts, to the satisfaction of a Country Auditory, which effects hoping the Lord will crown this work withall, I take leave humbly to subscribe my self,

*From my house  
in Southwark,  
Febru. 25.*

1633.

A Lover of this  
Art, and of  
you all,

*Henry Jackson.*





## To the Reader.

Courteous Reader,



*Am desired by my learned Friend and Tutor, M. Mark Franck, sometimes Fellow of Pembroke Hall, Cambridge, to read this Translation of his old acquaintance Master Jackson, Chirurgeon, and to write my thoughts, as an Epistle before it; in obedience whereof I shall briefly address my self. I understand the Author to be Jacobus Carpus Bononiensis (because of his Figures, as also his mentioning his Commentaries upon Mundinus) printed in Latine in the year one thousand five hundred and thirty, about one hundred and*

## To the Reader.

and thirty years agoe. Hee was in his time much esteemed for a most industrious, judicious, and expert Anatomist, and hath in this Book given good testimony thereof, for he hath in this Hsagoge exceedingly much improved the administration of Anatomy, in many difficult parts of it, which is one of the principal qualifications of an Anatomist; therefore its hoped this Book will bee as well worth the reading as any in that particular, by whosoever that will favour that ever Noble employment and exercise. Moreover, this good old Author is concise and short, without any tedious repetitions, and also writ in an excellent good order and method, and will neither spend time in reading, nor charge considerable. Its hoped the Reader will easily bee perswaded to indulge this Writer with the common abatement necessarily

## To the Reader.

cessarily granted to all our ancient Authors.

First, for that he writ so long before our for ever renowned Doctor Harvey, and therefore was not acquainted with those curious truths of the circuit of the bloud, which evidently demonstrates that the Veins reduce that bloud which was sent by the Arteries from the Heart abroad into the parts of the Body, and that the Heart with the Bloud and Spirits, is the chief Organ of vitality, the habitacle of the spirit of Life, common to us with Brutes: but the Brain, the Primum sensorium, the seat of the Intellect, the complement of man, and the palace of the immortal soul.

The other excuse to bee entreated for the Author of this Work, is also for his age; for hee lived before our incomparable Doctor Glisson,

To the Reader.

Glisson, had demonstrated the true uses of the Liver; the exact way of Nature's making Blood; the nature and course of the Lympha, and the motion of the Chyle; and that the Splene poures no iuyce, either sowre or sweet into the Stomach: which being supplied, our Author may happily pass compleatly current.

Formerly Italy bred many such learned Physicians and Philosophers as this Author, and then it was worth the while to journey to Padua to hear them, as other Nations anciently went into Ægypt: But now England by the industry of Harvey and Glisson, is the only Scene for both; so that the politick Italian, if he will attempt the attaining to the knowledge of any thing considerable in either, must visit England, and ours stay to better purpose at home, unless the careful Father shall judge

## To the Reader.

judge it necessary for the manning  
his Son, to hazard him such a  
Pilgrimage as to survey the ruines  
of old Rome, and Campus Mar-  
tius the stately place of the new.  
Lectures upon barbarous Avicen  
will never advance the true worth  
and knowledge of Physick, nor his  
Auditors ever admit the truth of  
the Circulation of the Bloud, whilst  
they deat upon his third or middle  
Sinus in the Septum of the Heart,  
which this good Author did then  
deny.

This Anatomist hath pursued  
the various duets of the Vessels, to  
wit, Arteries, Veines, and Nerves,  
and also the Muscles, with a  
notable design, which hath given  
our later Authors occasion fre-  
quently to mention his Labours  
with honour. This Book, as it is  
ancient and learned, so it hath  
been rare to bee found with us;  
therefore wee owe much to this  
Trans-



To the Reader.

Translators industry, who hath  
rendred it answerable to the Ori-  
ginal, and made it both easie for  
any to be had, and by the vulgar  
to be understood. I crave your ex-  
cuse for this freedom, both in  
commending the Author, and in-  
forming the Reader, that hee bee  
not mislead; as also to adde, that  
I suppose the word Colligancy  
may in some places be read conti-  
nuation, or connexion, or com-  
munion, without wrong to the  
Authors sense, but in all shall wil-  
lingly submit, and so conclude

Feb. 24.

1642.

Tho. Wharton.



De Libello Jacobi Berengarii

Ὁ Ἀναγρᾶμματισμός

Jacobus Berengarius

Vis Cibare? Bonus ager } Anagr.

Tunc cibare velis? (loquitur Jacobus) adesto,  
Est bonus (inquit) ager, qui bene pascit

over:

Quem Berengarius duro percussit aratro,  
Fructus distribuit panperis auxilio.

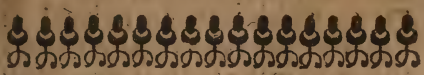
Henricus Jackson.

Ὁ Παράφρασις.



## Errata:

FOL. 77. for quantibz read quantity, f. 80.  
for different Vessels, r. deferent Vessels,  
f. 108. for cancrenated r. cancerated, f.  
114. for on the upper part it containeth the  
Natural members, and on the lower the Vital,  
&c. r. for on the upper part it containeth the  
Vital members, and on the lower the Natu-  
ral, f. 113. for of *Mundinus* is called *invol-*  
*ui*, r. are called *invisi*, f. 147. for endi-  
nious r. endemious, f. 249. for and first it is  
to be noted, r. and first is to be noted, f. 263.  
for from which the voyce and conservation of  
life reboundeth, r. from which the voyce re-  
boundeth, and it is a conservation of life, f.  
309. for concur, r. occur, f. 313. for safety  
and such like, r. raffati and such like.



**A**

# Brief and Practical ANATOMY.



His Work hath two  
Parts, the first hand-  
leth things Univer-  
sal, the second things  
Particular; the first  
doth ( according to the opinions of  
some ) denote *Anatomia* to be de-  
rived of  $\alpha\nu\alpha$  a Greek word, which  
in Latine signifieth *per*, and *sur-  
sum*, through, upward, a thing  
truly equal and right, and  $\tau\omicron\mu\eta$ ,  
which is *diviso* or *sectio*, a division  
or section, as it were a right divi-  
sion through or about the parts.

$\alpha\nu\alpha$  De-  
clarat et  
am aqua-  
lem quan-  
dam distri-  
butionem.  
Vi. Scap

But by a truer interpretation  
 $\alpha\nu\alpha$ , in composition ( amongst the  
rest ) signifieth a certain enquiry  
made through all the parts, where-

**B** upon

A brief and

upon in composition of this word *τέμνω*, which is *incido*, to incise, it signifieth in *singulas partes seco*, that is, to make incision into every part, to the end that we may know what and how many they be : and although it may seem reason that every thing should bee spoken of what parts it hath, yet use hath obtained this, that it bee spoken of Animals, and especially of men.

Therefore *Anatomia*, or *Anatome* ; Anatomy, is a division of all the parts of a living Creature, that wee may know their Substance, Quantity, Number, Figure, the Situation, and Colligancy of them, and all these are in dead bodies ; and therefore *Galen* said in his Book of the Constitution of the Art of healing, *I think it were necessary for us when we intend this Art, not only to know the parts and their composition, but their operations also* ; and in this Physicians do differ from Builders, for they doe only know the parts and compositions of Houses, whereof none hath operation, because it is not a living Creature ; but

*colligantia* from *Colligo*, as, is such an affinity of the parts, as is by being tied or fastned to one another.

*practical Anatomy.*

3

but by Physicians, of the members of man, insomuch as he is a living Creature, operations are to be sought; and because that in a living man, and not in a dead, there are Operations, Complexions, and Passions, so that these three being added to the other six, there are in a real Anatomy those aforesaid nine things to be considered.

But because we must begin from the whole as being best known; First, some dead body being laid with his face upward, in a place fit for dissection & demonstration, being before washed, the hairs shaved, and very well cleansed from filth, even from the head to the feet; we must know, that the body is divided into four parts, that is, into three notable Bellies, and the extrems, to wit, the hands and the feet, with some others.

The first part being the Head is *Testa*, an earthen pot, called in Latine *Caput*, *quia ibi sensus initium capiunt*, because the Senses take their beginning there; in which the Animal members are contained;

B 2 and



and this is called the highest Belly.

The second part is a Cavity between the ribs and the bones annexed to them, in which there are principally the Spiritual or Vital members, and some others; and this is called *Pectus*, and *Cassus*, the breast, and the middle belly.

The third part is the hollownes which is within the *Abdomen*, and part of the Back underneath the *Septum transversum*, otherwise *Diafragma*, and goeth down before unto the *Pecten*, and behind unto the *Anus*; in which the Nutritive members, and also the Generative are partly contained; and this is called the lower belly.

The fourth part is the whole residue of the body, as the neck, the hands, and the feet, and parts that belong unto them.

*Of the Anatomy of the  
lower Belly.*

**T**He universal part being seen, I come to the particular, in which the Work-man must begin his

his incision from the lower belly, wherein there are many members first to be Anatomised and cast away, lest if they bee left behind, they should hinder the rest of the body by their putrefaction and evil favour.

Therefore let this Belly be considered according to the nine aforesaid conditions: and first for the Substance which is diverse, as well according to the parts Containing, as the parts Contained; the Substance of the parts Contained will appear in its place, but the Substance of the parts Containing in the former and lateral part is Pannicular and Musculous, that it may bee fit for Constriction and Dilatation, because of impregnation, and food, and the like. There is also notable fatness in these parts in a fat Body, but in a lean body little, and sometimes none at all; and fatness is not properly a member, but increasing and diminishing as a superfluity, nevertheless profitable.

But the hinder substance of this belly is fleshy, musculous, bony,

and also somewhat membranous.

Its Quantity and Figure are apparent, its Situation and place is under the belly of the Vital members, the *Septum transversum* being between; and it beginneth from the lower *funicula* of the Brest, and from the bounds of the five lower Ribs on both sides, and goeth unto that part in which the body is divided into two parts by the great Feet to which it is fastened; it hath Colligancy with the Brain by means of the Nerves, and with the Heart by means of the Arteries, and with the middle Belly by some Muscles; the Colligancy that it hath with the Liver, and with the members of Generation is sufficiently known,

The great foot is the whole thigh, leg, and foot, from the groyn downward.

It is in Number one Belly, yet the number of the parts of it is diverse, because some are Contained, and some Containing; the parts contained are the Liver, with its little Cystern containing Choler, and the Spleen, and the *Ventriculus* called of many *Stomachus*, although

*practical Anatomy.*

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though not well, also the six Intestines with the Veins dispersed through them, and the Reins with their Emulgents, and the Bladder with the Uritidian pores, which are called the Emunctories of the Reins, and the *Mesentericon* with his glandules, and the *Vena Porta*, and *Vena Chylia* descending with the *Arteria Aorta*; and also the Umbelical veins and Arteries, and the Seminary vessels, with the Didimies, and Testicles, and the Matrix in a Woman; and although the Didimies and Testicles, with their *Scrotum* or *Oscheon* may be exteriour parts, yet they are reckoned within that Belly, because they are immediately fastned unto it.

But of the parts Containing, some are Common, some Proper, and some more proper; the Common are all those parts which compass about that Belly, to wit the Anterior, the Lateral, and the Posterior parts; the Anterior or Lateral parts are called in Latine *Sumen*, but by antiquity *Abdomen*, in Greek *ἐπὶ γαστήριον*, and of

Epigastrion.



Etrou.

some ἵπτεον, and in Arabick *Mirrach*; the Posterious are called *Imum dorsi*, the bottom or lowest part of the back.

But the parts Proper, some are also before, some on the sides, and some behind; those which are before, of the latter Physicians are commonly appointed five; the first which is the highest is in the middle of the Body, about the lower *furcula* of the Brest, and is called *Gladialis*, & *scutalis cartilago*, and also *Pomum granatum*; but this part is common both to the middle, and to the lower belly, taking up but little room.

The second immediately under that is called *Pars stomachalis*, the region of the Stomach, because the stomach, that is the Ventricle, hath its former part in that region, and this part reacheth unto the Navel.

The third part is called *Umbilicalis*, and it is that part in which the Navel is enclosed in the middle of the *Abdomen*, which is now frustrate from his principal function in a childe.

The



The fourth part is called of *Mundinus, Sumen*, because it is the most eminent part of the very *Su- Synecdoche* *men*, and there the part is taken *parvis* for the whole; this region is from the Navel unto the *Pecten*.

The fifth part is called *Pecten*, within which is the *Os pubis*, or *Pectinis*, in that region there beginneth the neck of the Bladder in both Sexes, and of the Matrix in a woman.

The Lateral parts, as they are equally divided on both sides, are of Physicians commonly said to be two, to wit, the Superiour, and the Inferiour; the Superiour is called *Hypochondrium*, the Inferiour is called *Ilium*, or *Flancus*; the *Ilia* are also called *Lagones*, & *Ceneones*; *Λαγών* in the right *Hypochondrium* is the *Laxa fig-* *nificat.* Liver, but in the left the Spleen; the upper part of the *Ilia* beginneth *Κεφών* *vacua fig-* *nificat.* from the top of the *Os anch-* *rum*, and endeth about the bottom, in the extream part of this Belly; their lowest part is called *Inguen* & *bubo*, but the *Hypochondria* doe begin from the lowest of the false ribs,

ribs, and are terminated below at the *Ili*a; between the *Ili*a and *Hypochondria* there appeareth a certain cavity when a man bendeth himself forward, which of some is called *Colago*, and of some *Intrum*.

The parts properly called the Posterior, some are in the middle, and some on the sides; those which are in the middle are *Spina inferior*, & *filum inferius dorsi*, the lower spine, and line of the Back.

Of the Lateral parts some are Superior, and some Inferiour; the Superior are called, *Regiones Lumbares*, or *Renales*, the regions of the Loyns or Reins; the Inferiour are called *Partes supra clunes*, the parts above the Buttocks.

But the parts called more Proper, some are also Anteriour, some Lateral, and some Posterior; the Anteriour and Lateral parts happen together, and they are that skin which you first meet withall, under which there is Fatness, and eight Muscles; of which four are oblique, two long, and

two broad; all which are dilated, and united to the likenesse of a Pannicle, which may be called, and indeed is called of *Avicen*, *Panniculus Carnosus*, the fleshy pannicle; neither is there any other fleshy pannicle there, as late Physicians doe suppose.

Under the Muscles there is a membrane subtile and hard, called in Greek *περιτόναιον* or *περιτόνειον*, *Peritoneion*, and in Arabick *Sifac*; and all these doe make the *Abdomen* or *Mirach*.

But the Posterious parts called also more Proper, are the Skin, sometimes some Fatness, and a musculous flesh on both sides of the Spondiles, to wit, before and behind, called of some *Lumbaris*, and a simple flesh not musculous, filling the empty places of this part; and the spondiles of the Reins or *Alkatim*, and three bones of the *Os sacrum*, or the three Spondiles, called in Arabick *Alhovius*, and the three Spondiles called *Alhesos*, or *Cauda*; also their Cartilages, with their Pannicles, and Nerves, Veins, and

and Arteries, with the pannicle *Peritonion*; the Anatomy of those parts shall bee spoken of in their place; but now I return to the Anatomy of the *Abdomen*.

*Umbilicus* Of the skin of the lower Belly, and of  
*quasi umbo*  
*iliacus* *Umbilicus* the Navel.

*quod ibi sit*  
*iliorum*  
*umbo. Gra.*  
*ομφα-*  
*λο.*

Graeca.

**Y**OU shall first consider the situation of the Navil, which is termed the root of man; which hath two veins without the body toward the Matrix, and very often one; and two Arteries covered with the superfluous skin; which in Children new born is tied up, and cut near unto the *Abdomen*, and is consolidated and shut up again it self; the middle part of it thus consolidated is called *Acromphalum*, and because it is wrinkled it is called *Vetula*, and in Greek *γαστήρ*; these things being noted, cut the skin in the manner of a croise in length and breadth through the whole *Abdomen*, and excoriate it, reserving the Navel unhurt, which you shall very often perceive entering

tring into the belly with one notable Vein and two Arteries, which are frustrated from their proper work in Children; the Vein is ascending, penetrating into the concave of the Liver in the *Vena porta*.

The Arteries descend by the inward part of the *Abdomen*, almost unto the *Pecten*, and they pass unto the back from the sides of the Bladder, and are implanted, one on the right side, the other on the left into the *Arteria aorta*, which is two-forked about the *Os sacrum* near the Reins.

From those Vessels the blood and spirit doth pass to the Liver, and Heart of an infant in the Mothers womb; but you shall see the Navel better after the Anatomy of the *Abdomen*, which you shall carefully reserve, observing the skin which is two-fold; the first is the Exterieur, which is a grosse superfluity of members, and therefore it groweth again; the second is the Interiour, which is nervous, not growing again, under which or within



within which, about the sides, there are in both Sexes two Veins, one on the right side, another on the left, hardly to bee seen in one that is born, but in a *fetus* of three months they doe very well appear, which doe ascend unto the *Mamilla* or *Tears*, which observe and keep for the Anatomy of the *Mamilla* or *Teats*, especially in a Woman.

But in the whole skin of the body there are very small veins dispersed into *fibras*, and they are so small and narrow that the blood cannot pierce through them, nor any thing else but a banished humour which is called Sweat, and the Serosity of the blood.

Whey  
istness.

*Pinguis*  
*dicuntur quasi*  
πίον γῆ-  
ος πίον  
α πίον  
ποτο &  
γῆος ter-  
renus.

*Of fatness, called pinguedo.*

**A**fter the Skin there is alwaies some fatnesse, especially in a body not brought down by sickness, more in one than in another, which remove, that the members contained under it may the better be seen.

*Of*

Of the Muscles of the lower  
Belly.

Musculus a  
multis  
similitudi-  
ne.

**A**fter the Fatness are to be seen eight Muscles of the *Abdomen*, of which first of all four named obliques doe occur; two of them are placed on the right side, and two on the left, which doe cover all that belly before with their Chords, from the top to the bottom, and doe ride over all the other; for in each side of the belly, and before in the middle of the *abdomen*, one of them is descending, and one ascending; the descendent are above the ascendent, which you may see being guided by a learned hand.

First, you shall warily separate the descendent from the ascendent, and you shall find them in each side of the belly to bee crossed of one another, one crosse is on the right side, another on the left; their fleshy part doth mutually crosse it self, even as the sinewy or Chordy part also doth crosse it self;

self; their fibers doe alwaies reach obliquely from the sides toward the middle of the Belly, therefore the Chords of those muscles of the right side, doe reach unto the left part of the same right side; and the chords of the muscles of the left side, do reach after a contrary manner: for their own proper chords doe in each side crosse one another.

And the Oblique muscles begin to make their chord when they meet with the Long muscles; and the chords of the Muscles of the right side, and also of the left are terminated when the long muscles are contiguous, which place is in the middle of the belly, by the *Linea recta*, from the *Pomum granatum* unto the *Pecten*.

The Descendent take their beginning from the breast, the Ascendent from the upper and anteriour region of the *Ossium ancharum*; their Chords are double coated, and very broad, hardly to be separated, having their beginning from the pannicles covering them, and from the nervous vills through them dispersed.

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The first figure of Muscles  
Place these six figures between the 16 and 17 pages



The II figure of Muscles



The III figure of Muscles



The IIII figure of Muscles



The V figure of Muscles



The VI figure of Muscles



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Two coats of the Chords of the descendent Muscles on both sides, and one coat of the Chords of the Muscles ascendent doth cover over the long muscle of his side from the top to the bottom; also one coat of the Oblique muscles doth cover or involve the long muscle of his side toward the bottom, that is toward the Chord of the Broad muscle; because the long muscles, have not a proper pannicle covering them, as the sense sheweth; and you may very well see the aforesaid oblique muscles in the three figures immediately following; but observe all their ligaments diligently in your incision, which you may not take quite away (unlesse those which are over the long Muscles) but those which are under the Long muscles are to be kept until you have anatomized them.

*The first Figure of Muscles.*

In this Figure you have two Oblique Muscles descending, one on the right side, another on the left,  
C which

which are above all the Muscles; the fleshy part of them appeareth on the sides, and in the middle of the belly, their Chords are above the long Muscles, to wit, one on the right side, another on the left, which are pellicular and broad, which are terminated in the *Linea*, which is in the middle of the belly, as you see, and those ligaments are of the two Pellicles, to wit, below and above.

*The second Figure of Muscles.*

In this Figure you have two Oblique Muscles ascending, which doe cross themselves with the two descending placed in the other Figure, which descendent are indeed above those ascendent; and one whole Muscle of the aforesaid descendent (placed above in the other Figure) doth with his Chord obliquely ride over one of those oblique ascendent Muscles, and they together make the shape of x the Greek letter; and the fleshy part of those Muscles is also on the sides

sides, but their Chords are in the middle of the belly, which are also of the two Pellicles, and they have one Pellicle only over-riding the long Muscles, but the other Pellicle is below the long Muscles, which cleaveth to the Chords of the latitudinal Muscles; and those Chords are also terminated in the *Linea*, which as you see is in the middle of the belly.

*The third Figure of Muscles.*

In this Figure you see how the Long Muscles being taken away, under them there is one Pellicle which is of the Chord of the Oblique Muscles, which hath Oblique Vills, and there is one under each Long Muscle, as you see in this Figure, and the Long Muscles are those which hang between the thighs, that they may appear taken from their Natural place, that the Chords of the aforefaid Oblique ascending Muscles might be seen.

## Of the Long Muscles.

**T**He Long or right Muscles are two, placed in the middle of the *Abdomen*, below and above the Chords spoken of before, reaching with their Vills from the lower *furcata* of the Breast through the length of the belly unto the *Os Pectinis*, and they are therefore called Long; they touch one another, taking up the antierior part of the belly in breadth, being in the quantity of their breadth in all eight fingers or thereabout; those Muscles have not a proper pannicle as others, yet they have short Chords terminated in the *Pecten*, and they have not any other Chords; their substance is fleshy, and divided through the breadth by two sinowy or ligamental intermedians, whereof one is above the Umbelical region, the other below, so that every Muscle seemeth divided into three fleshy parts notably distinct; as you may see in the Figure following.

The

*The fourth Figure of Muscles.*

In this Figure you see two Long Muscles stripped from the Chords of the Oblique muscles, which Long muscles are above the ligaments of the Latitudinal muscles, and every Muscle hath two sinowy or ligamental divisions in it, reaching through the breadth; to wit, one above the Navil, and another below, as you see; and so every Long muscle seemeth divided into three Parts, or into three Muscles; and Nature hath done this; because by how much the threeds of the Muscles are shorter, by so much they are the better, and more easily contracted.

*Of the Broad Muscles.*

**T**He aforesaid things being seen, you may cast away as well the Oblique as the Right Muscles, that you may the better see the Broad, which with their Chords are under the Long muscles (one



of the coats of the Chords of the Oblique ascending muscles coming between them : ) which observe with diligence after the Long muscles are removed, which tunicle is very subtile, notably fastned to the Chords of the Latitudinal muscles ; the Broad muscles have their fleshy part under the fleshy part of the Obliques, and they are called broad, because the position of their Vills is through the breadth of the belly, and they are more above the Umbelical region than below, because their principal operation is from the upper parts to the lower, which is to help the expulsive virtue of the Intestines; the fleshy part of them is towards the back, they are terminated into Chords in that region, where the situation is of the Longitudinal muscles, and the Right meeteth with the Left his Chord being between; their fleshy part is under the flesh of the Obliques, and their Chords are immediately under the Chord of the aforesaid Oblique ascending muscles; those Chords also are very broad,

broad, and also double coated and hard, compact together, fastned to the pannicle *Peritonion* or *Sifac*, and their Chords doe crosse themselves with the Long muscles unto right Angles.

The situation of the Muscles of the lower Belly appeareth by that which hath been said; their substance, their quantity, and their shape is to be seen; in number they are Eight, four Oblique, two Long, two Broad; their Colligancy is shewn, for they are very firmly chained together, and they are so united that they are judged one pannicle, which is called *Carnosus*, the Fleshy Pannicle; their complexion in a live man appeareth by their substance.

The helps of them are to keep the Intestines warm, and to hold in all the united members of nutrition, and to help the retentive virtue, but chiefly the expulsive, and sometimes they help the members of breathing, especially in \* *Flamine cum ictu*, in a Blast with a stroke or noyle, and in a violent expirati-

\* See Galen in 4<sup>o</sup> inte-rior c. 15. where hee maketh mention of five operations of breathing, whereof this is one.

on: they may suffer passions of all sorts.

You shall see the aforesaid Muscles in the first Figure following, and in the second Figure you shall see the situation, place, and also the shape of the eight Muscles of the *Abdomen*, or *Epigastrium*, otherwise *Mirach*; but hee which intendeth better to search into these Muscles, and many other things, let him have recourse unto our Commentaries upon *Mund*. the envie of whose labour shall affect me after death.

*The fifth Figure of Muscles.*

In this Figure you have two Broad muscles, above which were the Long and Oblique muscles, which are now taken away from them, as you see, and the fleshy part of those Latitudinal muscles is on the sides, but the Nervous part of them (to wit, their Chords) is in the middle of the Belly, and they are compounded of the two Pellicles, that is of that below and above,

bove, and they are fastned with the pannicle *Siphac*, and those Muscles are more in the upper part of this belly than in the lower, as you see, that they might the better expel downwards, that which is in the Intestines.

*The sixt Figure of Muscles.*

In this Figure are three kinds of Muscles, to wit, Oblique, Long, and Broad, and you have in the right part two Muscles, which are not covering the whole right part, as they doe naturally, and as it is shewn in the first and second Figures, and they are so made in this place, that the crossing of them may the better be seen; but in the left part you have one Long muscle, and one Broad. of which Broad the fleshy part doth only appear, but the Chord of that Broad muscle is under the Long muscle afore spoken of.

Of



## Of the Peritonion or Siphac.

περιτό-  
νειον δὲ  
περιτέι-  
νω, cir-  
cumtendo,  
quia cir-  
cum inesti-  
na circum-  
renditur.

THE aforesaid things being seen, remove carefully the Chords of the Broad muscles from a membrane annexed to them towards the Intestines, which is subtle and hard, named *Peritonion* and *Siphac*, this compasseth all the vacuity of the lower Belly round about; it is round, but not perfectly, its substance is Nervous, and hard, its shape is spoken of.

From that Pannicle doe arise two Purfes or Baggs, in which the two Testicles are placed within the *Sarotum*, which are parts of the same *Scrotum*; its quantity is so much as is the vacuity of the lower belly; its situation appeareth; in number it is one pannicle only; its Colligancy is with the Broad muscles, and with all the members contained in that Belly; and all the members of this Belly, have a proper Pannicle involving them, arising from this *Peritonion*.

It hath Colligancy, (according to



to *Avicen*) with the *Pleura*, it hath also Colligancy with the *Septum transversum*, and with the Testicles, its complexion is the same which is of other Pannicles.

Its Helps are to fasten the members of Nutrition, and Generation, to the Back, and to warm the Intestines, and to keep them from Rupture, and it is to hold them from going out of the belly; it helpeth also (together with the *Septum transversum*) the expulsion of that which is contained in the Ventricle, and in the Intestines, and in the Matrix.

It suffereth Passions of all sorts; its proper Passion is Rupture and Mollification; look for the cure of them all somewhere else, because in the demonstration of Anatomy, it is not convenient to put the cure of Ascites, neither the cure of wounds of the *Abdomen*, nor of the Intestines, nor the manner of gelding, nor drawing out of the stone (as *Mandinus* hath done) neither also of any other disease: yet wee will say somewhat of the Flebotomy of the Veines

Veines of *Guidex*, and perhaps some other special things.

Of the *Omentum* or *Zirbus*.

*Omentum*  
dis. quasi  
opimen-  
tum, ex  
opimus, vel  
ab omen,  
quod ex  
omenti in-  
spectione  
ominaren-  
tur.

**T**He members spoken of are to bee cast away, that the rest of the members may the better bee seen; and first cometh the *Zirbus* or *Omentum*, called of the vulgar sort *Rete*, a Net, or Caul, which is a member compounded of two very thin sinewy Pellicles, with much fatness annexed to it.

This member hath many pulsant and quiet Veines, but more manifest in a lean body, than in a fat; its Pannicles are discontinued throughout, unless about the circumference of it; it beareth the form of a Pouch or Bag, for between those Pellicles there is a very great hollownes.

Its substance hath been spoken of, it Colligance is with *Siphac*, with *Colon*, and with the Spleen; its situation is towards the fore-part, reaching over the Intestines from the Ventricle unto the *Inguina*; the quan-

quantity of it may bee seen ; it is in number onely one member ; its shape is handled , its complexion is the complexion of the parts of which it is compounded : its helps are to help digestion, and to mollifie the dregs : it may suffer passions of all sorts; it causeth the *Ramex* in the *Scrotum*, in the Navel, in the *Inguina*, and in other places of the *Sumen*, if the *Peristion* bee broke or mollified.

Of the Intestines.

**R**Emove the *Zirbus*, and you shall see the Intestines, which are continual from the Ventricle unto the *Anus*, they are revolved to and again, that they might retain the meat a long time for a good end, and they are six in number.

*Intestinum  
quod intus  
in ventre  
continetur.*

The first beginning with the lowest is *Rectum*, of the length of a Palm, or thereabouts.

The second is *Colon*, which ascendeth by the left side, unto the Region of the Kidney, and Spleen, and

and from thence it passeth from the left side unto the right, riding over the Stomach, and in the right side it is united to the intestine *Saccus* situated about the highest part of the *Os Ancha*.

This Intestine called *Saccus* or *Cecus* is to be reckoned the third in order, and these three are said to be of a gross substance, for they are fleshy, and they may bee consolidated if they receive solution.

The fourth is the long Intestine called *Ileon*, and *Revolutum*, or *Involutum*, because it is on both sides revolved throughout the Belly.

In the fifth place is *Jejunum*.

In the sixth, *Duodenum*, and these three are subtile, called of some *Lactes*; the solution of which, if it bee notable, is not consolidated: The uppermost are subtile by their Colligancy, and the lower gross; all of them have two Tunicles, and a common Pannicle coming from the *Peritonion* covering them over, and fastning them to the Back.

In the inside of them there sticketh

sticketh Pituity or Flegm to resist corrosion, and to make slippery the dregs; in them there are fibres of all sorts, but most broad; their complexion is cold and dry, & the small are colder than the gross, because their substance is Nervous: and in the gross there is some flesh; their shape is apparent; their particular situation hath been, and shall bee laid open by that which followeth; their Helps are known; they suffer passions of all sorts.

For the seeing of the particular Anatomy of the Intestines, first observe with diligence the situation of them, and before you separate them from the *Mesenterion*, consider their Veines, which are called of some *Lactes*, which do transport the *Chylus* to the *Vena Porta*, in the very small branches of which beginneth sanguification, by the help of the Liver; note also the situation of the *Vena Porta* which is without the concave of the Liver, reaching with eight branches towards the Intestines, and towards the Stomach, the



the *Omentum*, and the Spleen, all which observe with diligence, if you can, before the Intestines bee cast away.

*Of the Intestine Rectum.*

*Rectum  
quia as-  
cendit  
recte.*

**T**Hese things being dispatched, first wee must see the *Rectum*, or *Longaon*, which is to bee cleansed from the filth; driving it with your hand into the *Colon*: and its extreame part towards the *Colon* is to bee tyed in two places, and to be cut between the Ligatures; for its situation is from the *Anus* ascending to the upper parts through the belly, about the length of a Palm, having few Miseraick veines, because that which it containeth nourisheth but a little; it is terminated about the left *Ilium*, where the *Colon* beginneth, the *Rectum* being united thereunto.

*Of the Intestine Colon.*

*χῶλον  
dictum  
quasi  
κοίλον  
Cavum.*

**Y**OU shall observe the *Colon* to bee placed in the left side, and it

it ascendeth about the left Rein, and there it is strict, that it might give place to the Spleen, which it covereth, and to which it is fastned: it reacheth from hence to the right side, and doth ride over the Ventricle, and is fastned unto it: hence is caused the departing for a time in a *Syncopis*; hence doth its pain increase after meat is eaten; but the grief of the Reins groweth in the second digestion; it is fastned to the *Omentum*, of which, and also of the Ventricle it is moistned; it is covered with that *Penula* of the Liver, in which is the *Cistis Bilis*, the Gall, and therefore it is very black and bitter: it is vaulted or celled, and Pituity aboundeth there.

In it are ingendred *Cucurbitines*, and also other Worms: in it also the Ordure doth obtain an unequal shape: there is in it a rumbling a little before the time of feeding.

It is thus situated that the weight might the better descend from the upper to the lower part: and by

its situation to have the keeping of Clifters, and the places of applying Medicines in the Colick; its quantity is to bee seen; its substance is a little fleshy; and it is sinowy and fat, and solid, that it may resist hard and sharp matters; it hath also notable miseraick veins through which the *Chilus* and blood doth pass.

Its proper passion is a windy pain; in it there are bred stones, and skins by adust flegm.

These things being seen, you may separate the *Colon* from the *Mesentericon*, to which it is fastned, and let alone the *Rectum* in its place, until the Anatomy of the *Anus*, which cannot bee perfectly seen, but when you make Anatomy of the *Virga* and *Vesica*.

*Ex sacci  
similitudine*

It is called  
*Cecus* blind,  
and *Monoculus*, one  
eyed, be-  
cause it  
hath but  
one orifice.

*Of the Intestine Saccus.*

**T**O this Intestine about the *Oscula* beneath the Kidney in the right side is placed an intestine called *Cecus*, *Saccus*, and *Monoculus*, because it hangeth like a sack

sack, and it hath but one Orifice, by which it draweth and expelleth the excrements, but in certain hours it draweth from the *Ileon*, and driveth it into the *Colon*; in this there is a greater digestion than in any other Intestine, for it is a second Ventricle, first it draweth, next it digesteth, and afterwards expelleth unto the *Colon*.

Its quantity is about a palm in length, but it is as broad as *Colon*, and also more, it is not fastned to the *Mesentereon*, but hangeth in the belly; in it are bred worms called *Serpentes*.

But this Intestine is often found frustrate in nature, because it doth none of the aforesaid things, and then it is also found fastned to the Intestine *Colon* and *Ileon*, and it is as it were a certain additament, and its shape appeareth strictly compacted, but within it is empty, and is less in breadth than the least finger of the hand, and it is of the length of three inches or thereabouts.

## Of the Intestine Ileum.

ἐιλέον  
dic. ab  
ἐιλέω  
in arctum  
cogo.

Hic morbus  
dic  
ἐιλέω ab  
ἐιλέω  
misericordia  
quia mise-  
randus do-  
lor.

**T**O this Intestine *Saccus* going upward is immediately fastned the first of the slender Intestines called *Ileum*, and *Longum*, and *Revolutum*, or *Involutum*, whose substance is slender; its shape is very long and round; its quantity is longer than all the other Intestines together; there are more Miseraicks in that Intestine than in any other, because of his length; its situation is more about the *Ilia*, yet it is in other places through the belly; it is fastned to the *Mesentercon*, from which it must bee separated that you may well observe the other upper Intestines. Its proper passion \* is *dispositio Iliaca*, and the passion called *Miserere mei*, in which the ordure passeth to the mouth.

Of



Of the Intestine Jejunum.

TO this *Ileon* is continued the second small Gut, called *Jejunum*, *Hira*, *Hilla*, and *Sterile*, or *Vacuum*, and it is empty, because it is near unto the Liver by whom it is emptied, by drawing *Chylus* from it, and by expelling that which is contained in it, by means of *Choler* from the *Cistis*, entering into it about the *Duodenum*: it hath more Miseraicks, than any other Intestine like unto it in length, that they might quickly succour the Liver, yet it is emptiest in the upper part about the *Duodenum*, and it is not altogether streight, but beginneth to bee revolved where it is fastned to the *Ileon*, and therefore it is partly streight, and partly involved; it is of a Citron colour, because it is near the Liver; in substance and shape it is like to *Ileon*; its quantity may bee seen, but it is not much, and its situation is about the region of the Liver, and somewhat be-

*Jejunum*  
signifies  
hungry,  
empty, or  
barren, be-  
cause this  
gut is al-  
ways  
found  
empty.

low, but in the middle of the belly.

These things being seen you may also excarn this Intestine from the *Mesentercon* that you may the better see the *Duodenum*, which you shall know in his longitude from the stomach below, to bee in quantity as much as are twelve fingers in breadth from the stomach downward.

*Of the Intestine Duodennum.*

Δωδεκά-  
δακτύλιον  
a duodecem  
digitorum  
longitudine

**I**N the last place is to bee seen the highest of the small Guts, called *Duodenum* and *Dodecadactylon*, whose quantity in length appears above, and in breadth is less than every other Intestine, and is as much as the lower gate of the Ventricle, called in Greek *πυλαεὸς*, and in Latine *Janitor*.

The substance of it is slender, it is not revolved, but streight, fastned to the Ventricle towards its upper part, and it is fastned to the *Mesentercon*, also about the *Jejunum*, it is fastned to the *Cistis bilis*

*bilis*, by the Chanel which conveyeth choler for the cleansing of the Intestines from flegm principally, and from excrements.

That Chanel entreth Diagonally in that Intestine between a Tunicle, and a Tunicle, lest the Choler, and perhaps *Chilus* might again ascend unto the *Cistis*.

\* Or between the two Tunicles.

Consider that Chanel warily, and keep it for the Anatomy of the aforesaid *Cistis*; the helps of this Intestine are to take from the Ventricle things digested, and to send them to the other Intestines; it suffereth every kinde of disease.

*Of the Mesentericon.*

THESE things being seen, divide the *Duodenum* below the pore coming to it from the *Cistis bilis*, binding it first, lest that which is contained in the Ventricle go forth; and you may put away the other Intestines when you have first warily excarned them (as it is said before) from the *Mesentericon*.

ΜΕΣΕΝΤΕ-  
ΡΙΟΝ *quasi*  
ΜΕΣΟΝ ἑν-  
ΤΕΡΟΝ,  
*quia me-*  
dium inter  
*intestina-*  
*rum ob-*  
*tinet.*

or *Eucarus*, which of some is also called *Lactes*; this member is placed among the very Intestines, fastning them in their Center to the back; and it is compounded of doubled Pellicles of fat, and of Glandules, in the which there are many veins proceeding from the Liver, which are commonly called *Miseraicks*, and of *Galen* are called the hands of the Liver, because they snatch from the Intestines the matter of blood, and give it to the Liver; those veines are of the branches of *Vena porta*; in this member there are also some Arteries.

This member is divided into two parts; the first is fastned in the upper part to the *Jejunum* and *Duodenum*, which is very glandulous, and its Pellicles are single; the *Vena porta* do pass thorow that part to the Ventricle to the Spleen, and to the *Omentum* this part in a Hog is of a savoury taste, and is commonly called the Sweet-bit, and also *Brisaro*, and *Bocca saporita*: In those great Glandules  
is

is sometimes contained a matter causing a sickness, which is called *Melancholia Mirachia*.

Another part of this member is fastned to the other Intestines, whose Pellicles are doubled, because they fasten great members to the back; and this second part is esteemed of all men for the true *Mesentericon*; those two members are nourished from the veins of the *Porta*.

Their quantity and shape appear, the first is lesser than the second, their complexion is cold, they have colligancy with the back by means of *Siphac*; their helps are to fasten the Intestines to the back, and to sustain the Miscraick veins, and other veins of the *Porta*, and to moisten the dregs of the Intestines.

In number they are two members, even among the vulgar; they may suffer diseases of every sort; this member or members is to be let alone in its place, untill the Anatomy of the veins of *Porta* be seen.

of



Of the *Ventricle*, which is commonly called the *Stomach*.

*Ventriculus  
veteris dic.  
στομαχ  
enim idem  
est quod  
Gula.*

**T**He *Mesentericon* being dispatched, blow up the *Ventricle* through the *Duodenum* left afore, as much as you can, that the chiefeft greatness of it may be seen, then you may reduce it to a mean inflation, that other things requisite in it may the better be seen.

And first you shall observe its place, which is in the middle of the whole body, the extream parts excepted, and it is immediately under the *Septum transversum*; on the right side it hath the *Liver*, and on the left the *Spleen*, under it the *Intestine Colon*, and other *Intestines*, before the *Omentum*, and *Abdomen*, behind the back, and the parts contained therein; its situation is oblique, fastned to the back under the *Diafragma*; its upper part is in the left side, that it might give way to the *Liver*, which is in the right, and placed on high:

high : and that melancholy might  
the more easily go from the Spleen  
to the mouth of it : the lower part  
of it is in the right side, that it may  
give way to the *Colon* which is in  
the left taking up a great room ;  
but its lower part in the right side  
towards the *Portanarium* or gate, is  
less than in the left side toward  
the *Colon*, because in the right side  
the Liver taketh up a greater  
room than the *Colon* placed in the  
left ; also its lower part is in the  
right side, lest otherwise the Ori-  
fices should bee direct, both that  
the meat might bee the better re-  
tained, and that the Choler from  
the gall might the more easily en-  
ter into the *Duodenum* continued  
to the lower part of it.

Its substance is nervous, by pre-  
domination, its colour appears, its  
shape is round, arched after the  
manner of a \* *Mores* Goard ; its  
quantity is apparent.

\* Or Mo-  
relean.

It hath Colligancy with the  
heart by Arteries, with the Liver  
and Spleen by veins, with the  
Brain by the descendent nerves; it  
is

is fastned to the *Anus* by the Intestines, and to the mouth by means of the *Gula*; it is fastned to the *Zirbus* toward the former part; it hath two Tunicles, the innermost is more sinowy by reason of the appetite, and more gross rugged and hard, because it meeteth with hard meats; it is harder in the upper part; and also more sensible; it hath an outward Tunicle more subtil enclining a little to the nature of flesh; the innermost is some way nourished by the *Chilus*; the outermost is nourished by *Vena porta*; the innermost hath towards its inside long fibers serving for attraction, and towards its outside it hath oblique fibers for retention, the outermost hath broad fibers for expulsion.

The bottome of it serveth for the digestive faculty by means of the outermost Pannicle, and by means of the heat of those parts which are about it, yet it hath a proper hidden vertue of digestion, as the Matrix of generating, and the

he Liver of making blood; the upper part of it serveth for the appetite by the help of melancholy, milking it self into its mouth from the Spleen, and for this cause it is often found black.

The Ventricle hath also a common Tunicle involving it, and fastning it to the Back arising from the *Peritoneon*, which is grosser than any other member contained in the lower belly, except the *Mesentereon* in that part wherein it is doubled, and it is so on the Ventricle because of the extension that it hath in victuals.

The body of it is fastned with its upper Orifice to the back, to wit, between the twelve and thirteenth of the Spondiles of the back, which Orifice is properly called the Stomach, and there are applied Medicines for the comforting of the appetite, and this Orifice is in the very lower part of the *Gula*, or *Meri*, which by penetrating the *Diafragma* is continued upwards to the extream part of the mouth especially with its innermost

Pan-



pannicle) and this Orifice is shut up by the *Diafragma*, lest in the inclination of the body the meat might easily return back; it is also fastned to the back by its lower part, that is by the *Pyloron*, or otherwise *Pyloron*, or *Portanarium* in that place where the *Duodenum* is fastned to the back by the *Mesenterion*, but the rest of it is loose, and is easily moved any way; this *Portanarium* is higher than the bottom that contains the food, lest the meat might too easily fall downward.

In number it is one member; its complexion by the parts compounding it is cold and dry.

Its helps are to cause appetite, to retain, and to concoct the food, and to give the gross part to the intestines, but the good and digested to other members by means of the Liver.

It suffereth passions of all sorts, and through the great sence of it the heart and brain doe suffer with it.



Of the Spleen.

Splen a  
suppleo  
dic. quia  
vacuum lo-  
cum ex con-  
traria parte  
Fecoris sup-  
plet.

HAVING left the Ventricle in its place for the seeing of the *vena porta*, wee must mind the anatomy of the Spleen or Milt, and first you shall see it placed in the left *Hypochondrion*, cleaving to the Ventricle with its little concave part, and with its Gibbous part touching the ribs, towards the back and sides; it is covered with the *Peritonæon*.

But you may lift up the Corps as if it sate, that you may the better see the situation of it, which is under the *Diafragma*, immediately in the *Hypochondrion*, especially in a living body; but in a dead body, lying along, it seemeth to bee under the ribs, because its heaviness doth easily drive the *Diafragma* to the upper parts, for the Lungs are empty, and loose, easily yeelding; you may also break up some of the false ribs that you may the better see the situation of the Spleen; you may

may likewise doe so in the Anatomy of the Liver for the afore-said cause; this manner likewise would bee somewhat convenient in shewing the situation of the Stomach, which also in a dead body lying along seemeth (through the emptinesse of the Lungs) to bee under the bones of the brest with some of its upper part, more than it is naturally in a living body.

Its shape is square, somewhat like a half Moon, of a loose substance; it hath colligancy with the Heart by great arteries ( which you must mark ) making thin the gross bloud, which being made thin nourisheth the Spleen; it is fastned to the Liver by a branch of the *Porta*, to the braine by nerves, to the *Mesenteron* and *Omentum* by veins, and to *Siphac* by the pannicle covering it, to the stomach by many veins, some wherof doe nourish the left part of the Ventricle, and one doth milk out melancholy unto the mouth thereof; its quantity is known; its com-

complexion is ordained hot and moyſt, and is appointed oppoſite for that which is contained in it; in number it is one member; it is helpful to the whole body by purging the maſs of blood from the dreggs, and for that cauſe it provoketh laughter; ſometimes it maketh blood, it ſtirreth up appetite, it helpeth the digeſtion of the Stomack; it ſuffereth every kind of Diſeaſe, and there is ſometimes in it a ſpecial impediment of its courſe and ſtrong motion; and it is held that that part being taken away by a wound Creatures doe ſometimes live, and there are ſome that think, that through the greatneſſe of it laughter hath been quite hindered, and that it hath ſometimes changed place with the Liver (but very ſtrangely.)

*Of the Liver.*

**H**AVING ſeen the aforeſaid *ἵππορ ἀβ* parts, you muſt raiſe up the *ἐπειν ἔορ* Corps, as it is afore made plain, *id eſt ope-* that the Liver may ſhew its ſitu- *rari ſangu-*  
E ation, *nem.*

ation, which is immediately under the *Diafragma* in the right *Hypochondrion*; it is great in a man, because hee is a hot and moyſt Creature; it is of a Moon-like ſhape; its concave part is toward the Ventricle, but its gibbous part is touching the ribs about the *Diafragma*, but higher, and toward the ſides, and the back. Its ſubſtance is the fleſh of it, and the net woven of the Veines diſperſed in it, and its fleſh is coagulated bloud; it hath five Loaves, ſometimes four, and three, and ſometime two.

In the hollow part of it is one Veine called *Porta*, which entreth into it with five branches; which toward its gibbous part are diſperſed throughout the whole body even to the leaſt members; that the *Chylus* divided in them to the leaſt members might the better be transformed into bloud.

Alſo in the hollow part is a little *Ciſtus* or bladder cleaning the bloud from Choler, before it paſſe unto the gibbous part; alſo in the hollow

hollow part the *Vena Umbelicalis* entreth into the *Vena Porta* to nourish the young one in the Mothers wombe.

In the gibbous part is one Vein called *Chilis*, dispersed also with five branches through the whole body of it unto the least members; the least branches of this *Chilis* are joyned or united with the branches of *Porta*, and they suck from them bloud purified from Choler and Melancholy, but mixed with wateriness, which requireth a farther decoction in the gibbous part.

The Liver hath vent in its gibbous part of the *Septum transversum*, and of the *Vena Chilis* ascending by it to the heart, by which it is fastned unto it; it hath also small Arteries in the hollow part of it by which it is vented. These Arteries come from *Aorta* which is neer there, and are difficult to bee seen; it is fastned to the *Metaphrenum* by its pannicle suspending, and to the *Abdomen* by the *Vena Umbelicalis*; to the braine by a Nerve; but by the



means of a pannicle risen from the *Peritoneon* of which it is circum-  
 volved; it hath also colligancy  
 with every member that hath  
 a vein; its complexion is hot and  
 moyst; in number it is one; its  
 parts are proper flesh, the *Vena*  
*Porta*, *Vena Chilis*, and Arteries,  
 a Nerve with a pannicle, and the  
*Cistis* of choler; its operation is  
 the making of Bloud; its proper  
 passion is the Dropsie; yet it suf-  
 fereth every kind of disease.

*Of the Vena Porta.*

*Porta quia  
 per totum  
 corpus por-  
 tat sangui-  
 nem.*

**W**ithout the substance of the  
 Liver is *Vena Porta*, so cal-  
 led of a witty man according to  
 its nature (*Galen* being witnesse,) and  
 from him hath the name re-  
 mained untill now; which *Hip-  
 pocrates*, and all the company of  
*Asclepias* have commended, be-  
 cause its branches doe carry the  
 food before laboured in the belly  
 unto that place of the digestion for  
 the whole Creature, which we call  
 the Liver.

This vein without the Liver  
 hath

hath eight parts, two are small, six greater; one of the lesser hath two branches, one nourisheth the *Duodenum*, and the other the *Mesenterion*, close to the *Duodenum*.

The other lesser vein nourisheth the Ventricle about the *Portanarium*.

The first of the six greater nourisheth the outermost broad part of the Ventricle.

The second with some branches goeth towards the Spleen, from which first branch goeth to nourish the *Mesenterion*; forthwith one other great branch goeth to the Spleen, which in the way is divided into more branches, of which one great one doth nourish the left lower part of the Ventricle.

This same branch goeth on entering into the Spleen, and it sendeth from it two branches, one of which ascendeth, the other descendeth; of the ascending there are three parts, one part nourisheth the Spleen, another nourisheth

the upper part of the Ventricle, the other part passeth to the mouth of the Ventricle, milking into it Melancholy for the stirring up of the appetite, which for the most part goeth forth with the excrements thorough the Intestines.

The aforesaid descending Vein is divided into two parts, one branch nourisheth the Spleen, the other goeth to the *Omentum* in the left side, and nourisheth that.

The third branch of the six aforesaid, goeth on the left side for the succouring of the Intestine *Rectum*.

Also the fourth branch of the six greater is spread into capillary branches, whereof some go to nourish the right side of the Ventricle, and some to nourish the right side of the *Omentum*.

The fifth goeth to the *Mesenterion* in that place where it is fastned to the *Colon*.

But the sixth goeth to the *Mesenterion* in that part where it is fastned with its branches to the

*Jejunum*

*Jejunum* and *Ileon*, which are called the *Meseraick* veins, and this is very large.

The substance of these veins is such as of others; their quantity, and their principal number and situation, and inape and Colligancy are manifest; their complexion is cold and dry, but by reason of that which is contained, it is hot and moist; their help is to bring the afore-laboured meat to the Liver; it also with its branches beginneth the second digestion, it also carrieth nutriment to the Ventricle, to the Spleen, and *Omentum*, and it nourisheth the Intestines; it suffereth passions of all sorts, and especially opilations, and also the opening of his *Meseraicks*, and sometime scissures, and it suffereth with the Liver in all the diseases of it.

Of the *Cistis* containing *Choler*, which is called *Fel* the *Gall*.

THE *Cistis* of *Choler* called the *Gall*, is a purse or sack in the

*Fel quod folliculus gestans bilem.*

hollow part of the Liver, cleaving to a loab in the middle; it is compounded of a pannicular substance which is thin, solid, and without blood; having onely one Tunicle covered with the Pannicle which covereth the Liver; in it there are fibers of all sorts; in the inside it hath long and oblique fibers, on the outside broad.

Its substance is thin, because it digesteth not any thing, and it is hard, that it may resist the sharpness of the Choler; it hath one Pore entring immediately into its purse (which is called *communis*) being greater than others which (according to the opinions of some) is divided into three parts:

One goeth to the Liver, continued with the *Vena Porta*, from which it draweth Choler by narrow passages, in that Pore there are onely long fibers.

One other Pore goeth towards the Intestines, which is double at a certain distance, whereof one part goeth to the *Duodenum* towards the



the *Jejunum*, that it may cleanse the Intestines from flegm and excrements by the sharpness of the Choler sent thorow it; and that Pore entreth in the *Duodenum*

\* Diagonally between two Tunicles of it, lest that Choler, and those things which are contained in the Intestine should go back, and stop it.

\* A Diagonale is a line in Geometry drawn from one corner to another.

Another (according to some) goeth to the *Pylorus* of the Ventricle to comfort the digestion with its Choler; which if it bee much, maketh a man miserable by the continual vomiting of Choler (but some do deny this Pore;) by the common neck is caused its attraction and expulsion.

Its quantity and shape appears in number, it is one member; and it is fastned to the heart by a small Artery which it hath, and to the Brain by a small nerve; its native complexion is cold and dry.

Its helps are to purge the blood from Choler, and to make hot the

the digestion of the Liver, and to keep it from putrefaction; it doth also comfort the Ventricle, and cleanseth it from flegm, and helpeth the expulsive vertue of the Intestines; sometimes a man is without a gall, but this man is of a feeble health, and of a shorter life.

\* Yellow  
Jaundice.

It suffereth passions of all sorts; its proper passion is opilation, by which is caused *Morbis regius*, or \* *Ictericia*, and if there is opilation in the common Pore, and the body bee not purged of Cholera, then are caused cholerical diseases of divers sorts, yet the excrements may bee coloured.

But if there bee an opilation in the neck, reaching to the Intestines, and unto the *Portanarium*, then the excrements are discoloured; and also the Cholera is not purged from the *Cistis*, but doth flow back to the Liver, and doth cause many cholerical diseases.

And if there bee opilation in the neck towards the Liver, the excrements may bee coloured for  
some

some time ; and it will also cause cholerical diseases of divers sorts; but the opilation continuing, the excrements will bee discoloured. Wee have spoke of other things in the Comments upon *Mandinus*.

*Of the great Vein Chilis, and Aorta, descending, and emulgent.*

**T**He aforesaid parts being seen, you may put away the *Mesenterion*, the Spleen, and the Liver, of whose gibbous part, reserve that, from which the great chanel of *Vena Chilis* doth immediately go forth, that you may see the beginning of it; but leaving the Ventricle in its place unpuffed up that some other parts of it may also bee seen.

In the first place you shall see a great vein go forth of the gibbous part of the Liver, which is called *Parigiba*, and *Chilis*, and *Concava*, and *Mater venarum*; from which the blood is dispensed

*χίλις α*  
*χιλόω,*  
*pisco, quia*  
*partes san-*  
*guine ut*  
*mater ve-*  
*narum*  
*pascit.*  
*Αορτή*  
*quod vas*  
*signific.*

*από το*  
*tollo, quia*  
*ut vas san-*  
*guinem vi-*  
*talem per*  
*totum tol-*  
*lit.*

to

to all the parts of a living creature, by means of its branches, which are the receptacles of it; this vein is subtile, full of pores, and gentle, not double-coated, as the *Arteria Aorta*, lest it should too long time contain the blood which is gross, but that it should quickly nourish the members; it is also such, because it is without motion; but an Artery carrieth subtile blood, which of some is called the vital spirit; this doth continually systolize and diastolize: therefore it is hard, gross, and compact, lest it should bee broken, and it is such, that it may a long time contain the subtile blood contained in it, which by reason of its motion is disposed to solution. The upper part of this Vein ascendeth to the heart and further, perforating the *Diafragma*, which is called *Chilis ascendens*; of which it shall bee spoken in its place.

This same Vein directly descendeth, cleaving to the back, and is called *Chilis descendens*, which the great Artery descending, doth

accompany, called *Aorta*, which observe with diligence, together with the Vein, but the Vein is above the Artery, and they are both envolved in the *Peritoneon*.

In the descent of both of them, their branches are first divided, which go to the swadling-bands or pannicles of the Kidneis; but when they are in the direct of the Reins, the Vein, and likewise the Artery, send from them one notable branch on the right side, another on the left, which are continued in the Reins. These branches are called Emulgents; for the most part, the right branch is higher than the left, because it must be neer to the Liver, that it may quickly cleanse it from the Wateriness contained in the *Chilis*; And the left is lower, that its Kidney might give place to the Spleen, which is lower than the Liver. Those Orifices are not direct, that by the first might be drawn from members at hand, by the second from members afar off,



off, and lest their attraction should bee hindring to one another.

In like manner, from that Vein, and from the great Artery under the Kidneis, are many other Veins and Arteries separated, which nourish the *Rectum*, the Bladder, the Matrix, and the parts neer unto them. In like manner, in the direct of every Spondile, one branch from each of them enter into it, and is dispersed in the muscles neer unto them; also of the aforesaid branches, between every Spondile do enter very small branches, which do feed the *Nuca*, and the Pannicles, Ligaments, and Spondiles, which involve and fasten the same *Nuca*, as you shall see in the dissection of them; of the aforesaid branches, some also go to the muscles, and to the membrane of the *Abdomen*.

This Vein, and likewise the Artery about *Os sacrum*, beneath the Spondiles of the Reins, is forked into two equal parts to the form of a greek letter, which is cal-

called *Lambda* λ. Some call those two-forked Arteries Sempiternal, in which do enter two Umbelical Arteries, one whereof is on the right side, the other on the left, which descend in them to the sides of the Bladder.

Those two-forked Veins and Arteries, one on the right side, the other on the left, descending toward the Hippe, (according to some) are in each side divided into ten parts, whereof one nourisheth the lower part of the Back, being dispersed through the Loins toward the Kidneis within, and without.

And one other part being divided into capillary branches, nourisheth the *Peritoneon*.

And one nourisheth the profound muscles of the Hippe.

And one nourisheth the muscles of the *Anus*, and from it spring the Hæmoroidal Veins.

And one nourisheth the neck and mouth of the Matrix, from which also two branches go to the Bladder, one to the bottom, the

other to the neck of it; and that which goeth to the neck in women, is small, but in men great, because of the yard.

And one other of the ten goeth to the parts of the *Pecten*.

And one other extendeth to the long muscles of the *Abdomen*; whose branches ascending, are continued with the veins of the Breast, which descend toward them; and they united together, extend to the *Mamillas*, and from that branch in a woman, there do likewise go notable parts to the Matrix, from whence two Veins, not accompanied with Arteries, ascend by the *Abdomen* unto the *Mamillas*, by which they are fastened to the Matrix; and therefore in women with childe, and in the time of præternatural retention of the *Menstrues*, for the most part  
or Teats. the *Mamillas* swell.

And one other of the ten doth also go to the Matrix in a woman, but in a man it goeth to the yard, and to the cod.

But another goeth to the Univer-

versal muscles of the Hipp.

And another part, which is the tenth, doth also extend to the Hipp, and that is notable, and descendeth by the inside of the Hipp; and when it is neer to the Knee under the Ham, it is divided into three branches, whereof one is made oblique toward the outside of the Shank, and reacheth unto the Little foot; and this branch is called *Sciatica*, because being incised, it helpeth in the pains of it; and the beginning of that branch *Mundinus* knew not. One other of the three aforesaid descendeth unto the Foot by the inside, and this is called *Saphena*; but the third branch holdeth the middle between the aforesaid branches; all which do nourish the Shank, and the Foot; but of them, speech shall bee made in the Anatomy of the Great foot.

But observe, that there are more Veins than Arteries; Witness *Galen* in his sixteenth Book of the Utility of the parts, in the thirteenth and fourteenth Chapters;

F and

and witnesse the sense; and it is reason, because there are many cold members naturally, not wanting eventation, for which also a little spirit doth suffice; therefore they have not many Arteries; and in the hands, and in the feet, and in the brain, and in the superficial part of the neck, and in the *Cutis* of the whole body there are some Veins without Arteries; but there is no Artery without a Vein joyned to it, some whereof that are chiefly notable, are fastned together by a Pannicle risen from the Artery; and they are united together, that the Veins might bee made firm, and fortified by the aforesaid Pannicle, and that the Artery might give life to the Vein, and that the Vein might give bloud to the Artery in necessities, whereof is made vital spirit, and the Artery it self is nourished: but the small Arteries are not fastned with the Veins by the aforesaid Pannicle, although they are companions to one another, but they are companions that they may give life to, and nourish



nourish the members; witnesse *Galen*, where it is quoted above.

And the Veins and Arteries doe goe from the nearer places for the nourishing of their members, except the Veins and Arteries of the Testicles, and *Mamillae*, which goe unto them from a farre off, that the blood might make long delay in them, by which it is the better digested, and is more easily turned into good Sperm, and into Milk; and there are many Arteries and Veins not perceivable by the sense, as those which goe to the bones and to the skin, and those which extend unto the extreame parts of the members.

The situation of these Veins and Arteries, and also the substance and the quantity, and the shape doe appear; the number of the branches of them is unperceivable; their colligancy appeareth by that which hath been and is to be said; their helps are to nourish and give life to the whole body; they endure passions of all sorts.

But to them doe happen Dis-

eases compounded of the chief of Opilations, which are worser than the opilations of the nostrils, and Intestines, and like places; both becaule their opilation forbiddeth the members to bee nourished, not suffering the blood to flow unto them; as also because they cause the blood to flow back again unto the Liver, which causeth in it opilation, or putrifieth, or induceth some other ill Diseases; also their oppilation is ill, because it is often unknown, and because Medicines cannot bee well applied unto them, as well within the body as without: their solutions may bee of an inward cause, and of an outward, of which there are three kinds, one is commonly called *Diabrosis*, which is a *corrosion* of the vein, of *Dia*, which is *de*, of, or composition, and *Brosis*, or *Rosis*, which is *Comestio*, an eating; another kind is called *Rexis*, which is interpreted *incisio*, incision; the third is called *Anastomesis*, which is the same that the opening and dilatation

tion of the Veins is every where;  
*Diabrosis* corrodeth the veins, *Διάβρω-  
 Rexis* cutteth them, *Anastomosis* *Ἀναστο-  
 μωσις* causeth them to open.

But to the Emulgent Veins (among other Diseases) may happen a weaknesse of the attraction of the wonted watery bloud, as also in the Reins, whereupon they doe either not attract, or else weakly; and thereby happeneth either a difficulty, or a total ablation of the Urine; yea there being in the Bladder no Urine; in which case rude Physicians doe erre, attempting to draw Urine from the Bladder, with a Siringe or other handy operation, and that is a singular hazard, for the most part bringing death, which I have often seen, and amongst the rest, I was with many honoured Physicians, in the cure of the magnificent and illustrious Lord, Lord *Galateus*, of the noble Family of the *Palavicinians*, which was suffocated by the waterinesse of Urine gathered together in the Veins throughout, and this waterinesse

F 3      induced,

induced to him a Squinancy, for which wee applied *Ventoses* without scarification for diversion sake, and the *Ventoses* were filled with pure water through the pores of the skin; but these things by chance I have written for the profit and honour of young men.

*Of the Reins.*

*Renes α-  
πo TΣ pe-  
eiv a flu-  
endo :  
quod per  
eos Sper-  
ma & u-  
rina flu-  
unt.*

**W**ITH the aforesaid Emulgent branches are continued two fleshy bodies solid, covered with the *Peritoneon*, called *Renes*, or *Renanes*; they are two and not one, as the *Cistis* of Choler, and the Spleen, because the waterinesse is more than the dregs and scum of the bloud, for which is required one great place of purging, or two small ones; and it was not one great Kidney, lest it should crush together and presse the Intestines, and lest they should make the Back unequal; and they were two, that if the operation of one should bee hurt, that of the other might remain firm; and they were

were solid, that they might help much in a little room; and lest the Bloud should goe forth with the Urine by some of its Pores; and that they might not draw any thing by sucking it, but that which is thin; and that they might resist the sharpnesse of the Urine; they were also solid, because a thick body is stronger for attraction.

Their quantity appeareth; their shape may bee seen, which is like the grain of the Kidney bean; they have colligancy with the Brain by Nerves, by means of the Pannicles involving them; with the Liver by the aforesaid Veins; with the Heart by great Arteries. *Galen* hath noted, that the great Arteries in the Kidnies, are not only for the cause of nutrition, and giving life, seeing the Kidnies are little members, for which a little Artery did suffice, but in them there are great Arteries, because they doe also cleanse the Heart from waterinesse and Choler; and hee saith moreover, many times

*Phaseolus,*  
*Plin l. 18.*  
*ca. 12.*



*Aorta* draweth from the Stomach, and from the Intestines bloud not pure, yea *Chylus* which the Emulgent arteries doe purge out to the Kidnies.

I my self also in the year 1521. in our exercise at *Bononia*, saw in one publicly Anatomised, one of the Emulgent arteries that made one Pore in the right side without the Kidney, which in a notable distance beneath the Kidney did enter into the *Uritidian* pore risen from the aforesaid Kidney, and both of them by one chanel did reach unto the Bladder; neverthelesse this Emulgent artery did also enter into the Kidney in his wonted place; and in that individual the Kidneys were continued, as if it were one Kidney; and it had two Veins, and two Emulgent arteries, and two *Uritidian* pores with one only Pannicle involving, which did take up the wonted places of the Kidneys, and also the middle part of the Back, which is in the place between the Spleen and the Liver, a little below them. There-

Therefore let alone the left Kidney in its place, for the seeing of the Spermatical vessels, and divide the right in its concave part through the middle, according to the length of it, unto its center, considering the place of its Vein and great Artery, which doe enter into the substance of the Kidney in the hollow part of it, from which the Kidney doth draw spiric and nutriment, and the watery superfluities of the whole body mixt with Choler; all these mixt matters pass thorow the whole substance of the Kidney although it bee solid, because they are subtile; for bloud could not pass alone to the least parts of the Kidneys, because they are solid, except it were mixt with water and Choler; all which mixed are resembled to the washing of flesh, being drawn by the Kidneys thorow the Emulgents, from the Liver, and from the Heart, by means of the vein *Chilis*, and the artery *Aorta*.

This bloud mingled with much  
wate-

ὕδρα.

wateriness is alone retained of the Kidneys for their nutriment ; and the water together with the choler separated from the bloud passeth to a certain notable hollownes, being in the center of the Kidney, as it were into a ditch; the which the river or chanel called the *Uritidian* pore bringeth to the Bladder; this Pore called of the Greeks \* *Uretra*, is a very long, pannicular, solid, hollow body, having its beginning from the body of the Bladder (because as it is said it resembleth it) and ending at the Kidney, which consider with warinesse, and keep together with the Kidney for the anatomy of the Bladder.

And in the Kidney there is not a net, neither any other pannicular strainer, as some suppose, but the Kidneys are made hollow Organes, attracting by some Orifices, but sending forth by others a thin waterish superfluity.

Therefore *Galen* said in his fourth Book, *De Utilit. cap. 12.* Finally, many Drunkards drinking

ing whole *Amphoras*, and pissing the proportion of the multitude of drink, are not troubled about the separation, but the blood which cometh to the *Vena cava*, is readily and by stealth all purged forth by the Reins not touching the Vein; the afore-named Ditch hath about it a solid Pannicle, perforated with more than ten great holes, through which Nature milketh forth the Urine into the aforesaid hollownesse, by means of a certain small substance of the Kidney, like to the Nipples of the Teates of women.

The Colligancy of the Reins appeareth by that which hath been said; they are also fastned to the Brain by a little Nerve, by means of a pannicle covering them.

Their helps are to purge the whole body from superfluous Water and Choler, but especially the Liver and the Heart; nevertheless in the rest of the Veins there also remaineth much Wateriness mixt with the Blood, which  
is

is called *Vehiculum nutrimenti*, the Waggon of the nutriment, which appeareth in Bloud flebotomised, or otherwaies drawn from the body.

They suffer every kind of Disease, all which almost are of a hard curation, as is the *Diabetes*, or as it were the continual dropping down of the Urine; they also suffer a weaknesse of the attractive quality, by means of which the Urine goeth not to the Bladder, and by that means a living Creature is sometimes choaked, or dyeth some other way; also of such a weaknesse is caused the *Ascitis*: they also suffer Stones, Gravel, and Hairs, but the hairs are bred or condensed in the *urinary* pores; the stones of it are red, small, oftentimes long, being bred in the aforesaid trench; when the Kidneys are weakned, not able to retain the bloud, the Urine goeth forth bloody; it also goeth forth so when the Liver is weak, not separating the Watrinesse from the Bloud, by that



that separation and quantity which it ought.

Of the Seminary Vessels called  
Spermatica.

Those things being dispatched in both Sexes, first you shall note in the great Vein *Chilis*, and the Artery *Aorta*, sometimes above the Kidneys, sometimes below, one little Vein, and one Artery, both which are united at some distance touching one another, descending to the Testicles of the right side.

You shall also note two like Vessels in the like manner descending, and united in the left side, one from the Emulgent vein of the left Kidney, and another from the Artery *Aorta*; all those little Veins and Arteries so descending are called *Vasa Spermatica preparantia*, that is, the Seminary preparing vessels; these vessels are covered about with a Pannicle risen from the *Peritoneon*, called of *Celsus Aegitroides*; the Vein

lyeth

above, but the Artery lyeth beneath.

Those vessels are broader and harder in a Man than in a Woman, excepting the time of impregnation and menstrues; as it appeareth to the sense, by the much blood then retained in them; but at other times they are harder and broader in a man, and also they are always longer, because they are to carry their matter contained to a longer distance; and they are such, because the Masculine Seed is more, and is grosser than the Feminine; by which length also of the vessels of a man his Seed is the more digested; and the Seed of the right side engendreth Boyes, because its matter is more digested, and cleansed from waterinesse, but of the left side Girls, because it is cold and watery, coming from the aforesaid Emulgentes filled with watery blood.

These vessels in both Sexes agree in the place from whence, but disagree to whence; their termination in a woman is within the

he body, as it shall be said in the Anatomy of the Matrix, which is placed after the Anatomy of the Yard, and of the *Anus*, for better orders sake.

But these vessels in a man descend on both sides unto the *Os Pectinis*, in the end of the *Iliac*, above the Loyns, and therefore they are also called *Lumbaria*, which vessels in their descent above the *Os Pectinis* doe enter on both sides into one pannicular covering, risen partly from the extrem parts of the *Sifac*, which is commonly called *Didymus*, and *Cremasteres*, and they passe in the Cod near unto the Testicles, as it may bee seen in one only side, leaving the other side untouched, for the seeing of the Anatomy of the *Didymus*; but take heed lest you spoyle the *Scrotum* in any part, but draw that vessel only which you intend to see together with his *Didymus*, and Testicle, to the upper parts toward the *Pecten*.

These vessels descending neer unto the Testicles are very hard, and

A Disease  
in certain  
Veins  
swelled  
with wind  
and me-  
lancholy  
bloud like  
Worms.

and are revolved like to *Varices*, whereupon they are called *Variciformia*, which are made soft when they meet with the Testicles (about which they are revolved) lest they might hurt them with their hardnesse, and there these vessels are called *Epididymi*, and *Anendor*, and *Andros*.

From those vessels the matter of the Sperm doth immediately pass to the Testicles, in whose substance it procureth whitenesse, and the generative vertue; and from the Testicles it is again cast out to the aforesaid soft vessels named *Epididymi*, from which it passeth to other interiour vessels continued with them, which are called *Deferentia*, whose substance is white, and harder than the rest; these different vessels in a man ascend from the Testicles unto the *Pecten*, being contiguous with the aforesaid preparing vessels descending; which Deferents so ascended in the upper part of the *Os Pectinis*, are turned back again within the belly on both sides; which

which keep warily together with the Testicles, until you have seen the Anatomy of the *Didymies*, and also of the Testicles.

These vessels reflected within the body descend between *Rectum* and the Bladder, and there they dilate themselves into more caves full of Sperm, therefore these Vessels are called *Conservantia & Deserentia*, keeping together, and carrying the Sperm; and of *Galen* guided by *Eracleus*, they are called *Parastrata*, *Adeniformia*, because Kernelly flesh doth compass them.

On the right side, and on the left, these Vessels do pierce through the neck of the Bladder, and within the Yard about the *Anus*, they cast forth the Sperm, which afterward is driven forth through the Chancel of the Yard.

*Of the Didymies.*

These Vessels together with the Testicles, are involved in each side with one Pannicle; from the  
G bottom

Διδυμός

fig: gemi-  
nus quia  
gemini sunt



bottom of the Cod unto the lowest part of the *Ilia*; the greater part whereof hath its beginning from the *Peritoneon*, descending into the *Serolum*, in the end of the *Abdomen*, which is commonly called *Didymus*, and *suspensorium Testiculi*. Of the Greeks they are called *Cremasteres*; the substance of which consider, which are of three, (and perhaps according to some) of four revolutions of Pannicles.

The first is outmost, risen from the Pannicles of the Spondiles; another is risen from *Sifac*, or *Peritoneon*, contained within the *Abdomen*, neer unto the Thigh, which of *Celsus* is called *Darion*.

Of these two, by reason of their strong Colligancy, is made as it were one onely Pellicle.

Another is of the Pannicle, immediately involving the aforesaid vessels, risen from the *Peritoneon*, about the back; which is called *Aeguroides*.

Another is of the Chords of the muscles

muscles of the Testicles, which is small; consider also their quantity and Colligancy, their complexion and number; they have the Shape of a *Cista*, in the top narrow, in the bottom broad, as much as is the thickness of the Testicles.

Its uses are to hang up the Testicles, and to keep fast the aforesaid Vessels.

*Of the Scrotum, or Cod.*

Of those Pannicles, and of the skin, is compounded *Oscheon*, or *Scrotum*, that is, the purse of the Testicles, in which there are some Nerves giving sense unto it, and some Arteries and Veins nourishing it; and the *Scrotum* is one member common to the two *Didymies*, and it is a *Sinus* or vault, to the *Didymies*, Testicles, and to the Seminary Vessels.

This member is divided by the middle of a light Membrane, which of some is called *Sutura*, & *Taurum*, & *Chorda*; which al-

G 2

*Scrotum  
sen Scar-  
tum ex  
σκύτος  
pellis, ὀ-  
χέος Ga-  
le no ἀπὸ  
τῆς περιου-  
πείν ὀυ-  
τὰ, quod  
Testicu-  
los tegat  
veletq;*

fo

so doth somewhat appear in the outmost skin in the middle of the *Scrotum*, according to the length of the Body; the Quantity, Shape, Situation, Number, and Colligancy of this Member, are apparent; its complexion is cold and dry; its helps appear.

This member with the *Didymies*, endureth every kinde of disease; their proper passion is a dilatation of them, by which means are caused many Burstneses, called *Hernia*, to wit, one of the *Zirbus*, called *Omentalis*; another *Intestinalis*. In the *Scrotum* also is caused the *Hernie*, or *Hymea*, waterish, windy, humeral, and fleshy; and also the *Varicous*; which is made by a repletion of the Seminary Vessels, caused of gross blood, or of much and watery.

*Testiculi*  
*dicti quod*  
*testes sunt*  
*Virilitatis.*

### Of the Testicles.

**W**ithin the aforesaid *suspensories* on both sides are two glandulous white members, like

like to the flesh of the Teats, which are called *Testiculi*, whose Shape is like an Egge, and therefore they are also called *Ova*; their substance is without blood and all sense, yet it feeleth by its Pannicles; each of them hath two muscles cleaving to its Pannicles, that they might preserve them, and lift them up, lest they should be relaxed.

Their Quantity, their Number, and Situation, are apparent: their Native complexion is temperate in things active, moist in passive, but in fluent it is hot, by which means (Witness *Aristotle*) they draw to themselves from the whole body matter of the Sperm, as it were *Ventoses*; and they are placed of Physicians among the principal Members; they have Colligancy with the other principal Members, by Veins, by Arteries, and by Pannicles; their helps are to preserve the Species: they endure passions of all sorts.



*Vesica quæ  
est vas aquæ*

*Of the Vesica, or Bladder.*

**T**Hese things being dispatched, take away the Kidneys with the *Uritidian* pores, risen from the Bladder, entering *Diagonally* within its Tunicle, nearer to the neck than to the bottom, lest the Urine might flow back unto them; through those Pores doth sometimes pass a Little stone to the Bladder bred in the Kidnies, causing in them an extension, with a vehement pain, because they are Sinewy as the Bladder.

First, cut the body of the Bladder about the bottome of it, which is compounded of one onely Tunicle, in the outward part of which do go two Nerves for its sense; first noting its Situation, which is in the Lower part of the Belly, in the hollownes of the Little trough, in which is also the *Intestine Rectum*. toward the Back, and the Matrix in a woman in the middle of them.

You shall also note its Colligan-  
cy, and Quantity, and Shape, and  
Num-



Number, whose substance is Sinewy of the Nerves of the Ligament, not to bee consolidated, if it receive solution, in the Neck it is fleshy, and therefore there is consolidated; its Neck is united to the Yard throughout, even unto the extream part of the *Glans*, from whence goeth forth the Urine.

Its complexion is cold and dry, and it is circumvolved with one Pannicle risen from the *Peritoneon*; its uses are to retain the Urine a long time, lest a man should continually rise to send it forth: But it doth as it were, continually flow from the Kidneys to it. Certain glandules of flesh do help its retention, envolving and compressing the beginning of its Neck, on the outside; causing in the Neck some turnings, by reason of which the Bladder is not wholly cleansed from the water, and one onely muscle of the Bladder, envolving the mouth of it, doth help its Voluntary retention, and likewise Expulsion.

The Bladder may endure passions of all sorts, which are sometimes incurable, as is a very great stone; and Excoriation in a Cholerick body, and in an old man.

*Virga qua-  
si Vm ge-  
gens.*

*Of Virga, or the Yard.*

**A**fter the aforesaid Members, cometh the Yard, which is of a Ligamental substance, it is also Sinewy and hollow like a Sponge, yet with some muscles; the Yard, and likewise the Tongue, hath more and greater Veins and Arteries than any other Member like to it in bigness; through the aforesaid Porosities the Yard above being guided by the imaginative vertue, is oftentimes magnified and erected of the Spirit, for in it is a natural vertue, by which when a living creature is moved to Copulation, it is pushed up, and enlarged; and there is caused naturally a motion in the Heart and in Arteries, but in these it is caused alwaies for necessity; but in this sometimes when  
it

it is necessary. Its beginning and Situation is of a part of the *Pecten*, in the middle, known to all.

Its Shape is very long and round, having in it a Chanel, by which the Urine and Sperm go forth. The upper part of it is called *Glans*, and the head of the Yard, and there it is compact, hard, and of a dull sense, lest it should bee hurt in copulations; a certain soft Skin doth compass about that *Glans*, which is called *Preputium*, being obedient to turning back in every Friction.

*Preputium*  
a *praputand*  
do eo quod  
a *Juda*  
*praputatur*.

This *Preputium* in the lower part, in the middle onely, according to the length, is fastned to the greater part of the *Glans*, by a certain Pellicular member, called of the Vulgar, *El filello*.

Its Number, and also Quantity, are apparent; its Native complexion through influence is hot and moist; it hath Colligancy with the *Os pectinis*, with the Kernelly *Parastata*, with the Bladder, by means of the Chanel without,

by

by which the Urine floweth forth; with the Brain, by means of the Nerves, coming to the muscles and skin of it; with the Heart and Liver, by means of the afore-said Arteries and Veins descending.

The Yard hath in it three Orifices, one wide, the which is common both to the Sperm and Urine; and two small, by which the Sperm coming from the afore-said Seminary vessels, do enter into that common Orifice. Those two Orifices or Vessels, do enter into this Chanel, in the place called *Perineon*, which is a place between the Yard and the *Anus*. That Chanel from those Orifices to the Bladder, is according to the truth called the Neck of the Bladder; from hence unto the extreame part of the *Glans*, it is called the common Hole and Chanel of the Yard, and of some it is called *Uretra*.

The Yard also hath four Muscles, two towards its lower part, on both sides one, near unto the Cha-



channel of the Urine; which are long-ways extended, and do dilate the Yard, and elevate it; that the Sperm may with easiness pierce thorow it.

There are of it two other Muscles beginning from the root of it towards *Os Pectinis*, coming transverse about the *Glans* in its upper part; which when they are extended the Yard is lifted up, and when they cease from extension it is kept down; that if the extension happen to one, and not to the other, the Yard will decline to the part of the extended muscle.

The profit of the Yard is made principally for conservation of the Species; for by its means the Sperm is sent into the field of Nature, that is into the Matrix; which if it be of a moderate quantity (as likewise the Tongue) it is praised, and is profitable; for the shortness of it doth not bring the Sperm to the due place; and its too much length is the cause of the resolving of the spirits in the Sperm.

The



The Yard also by its Colligan-  
cy doth empty the Bladder from  
Urine, whereof it is a sign, because  
Lice applied to its extream Orifice  
provoke it by biting.

The helps of the *Præputium*, and  
the aforesaid Pellicle fastning it to  
the *Glans*, are to yeeld some de-  
light in Copulation, and to de-  
fend the *Glans* from outward  
hurts.

That *Præputium* the *Jews* take  
away in Circumcisions, working  
contrary to the intent of Nature;  
the Yard suffereth passions of all  
sorts, its proper passion is a *Pri-  
apism*.

For the well seeing of this A-  
natomy, the things spoken of be-  
ing first observed, and the situati-  
on of the Intestine *Rectum* being  
noted, separate with a *Scalprum*,  
*Faxe*, or Saw, or other Engine,  
the *Os Pectinus* from its lateral  
part, and together with the Bone  
separate a notable part of the But-  
tocks, to wit, that in which are  
the muscles of the *Anus*, and take  
away the *Rectum*, the Bladder, and  
the

the Yard, with the Seminary Vessels, and the aforesaid *Urethrian* Pores, and put the aforesaid members ( being first washed, and clean from the dung and bloudiness contained in them ) upon some table, that you may the better see the aforesaid members, putting away with diligence the *Os Pectinis* only from the aforesaid members.

And first, you shall note the place of the afore-named *Urethrian* Pores entering into the Bladder, by putting into them a *Probe*, or *Radiis*, or some such thing, and you shall perceive it peirce Diagonally through the substance of the body of the Bladder, into the hollownes of it, as hath been said before.

These things being seen, you shall also see the aforesaid Seminary vessels to enter between the *Rectum* and the Bladder, and with some instrument of Incision separate warily the *Rectum* from the Bladder, because in that place these members are very firmly fastned,

fastned, and you shall see the *Parastata* afore-named full of caves, and large, and incising them you shall find the Sperm there contained for two or more Copulations, and these Vessels are terminated in the chanel of the Yard.

And about that place you shall see notable glandulous flesh on the sides of the neck of the Bladder, which doth somewhat digest and whiten the Sperm there contained, or at least keepeth it that it be not dried up, conserving also in it the genitive spirit.

Those fleshes doe also keep the neck of the Bladder lest it should be dried, and also the Yard, which by reason of its length hanging without is apt to bee dried, and shut up; and for this cause Women have not that flesh; also those fleshes with their somewhat fatness resist the sharpness of the Urine.

These things being noted, you may slit the Yard long-ways, and you shall see the aforesaid chanel with

with the Orifices, through which the Sperm entreth, which are two, one on the right side, another on the left, not much distant from the hollownes of the Bladder; you shall also see the body of the Yard hollow, or pory, to the likeness of a Spunge, not very hollow, but somewhat compact.

*Of the Rectum.*

**T**He aforelaid things being noted, you must bee mindful of the place of the Intestine *Rectum* left before, for the Anatomy of the *Anus*, which you shall observe to bee in the hollownes of the little Trough, and is terminated within the Buttocks, in the place called *Anus*, from whence by the order of Nature those excrements of the first digestion goe forth; the higher part of it reacheth to the left side where it is fastned to the Intestine *Colon*.

You shall also consider its quantity,



tity, which is apparent; and its Shape, situation, and number you have seen afore; it hath Colligancy with the Heart, with the Liver, and the Brain, with the Bladder in a man, and with the Matrix in a woman.

Consider also its Complexion, which is cold, therefore it is between the Buttocks, lest it should be offended by cold.

After this divide it according to the length, and having very well washed it, you shall observe its inversion, which is ascending from the outermost part to the inside, the space of four fingers or thereabouts; for oftentimes you shall see the end of its inversion, and sometimes you may not see it; this inversion cleanseth it from the Excrements, because in the avoyding the excrements the *Rectum* doth somewhat descend; and this is best seen in Horses avoyding their excrements.

σφιγ-  
τη α  
σφιγγ  
stringo,  
est mus-  
culus.

The lower extremity of it is called *Anus*, and *Podex*, and *Sphincter*; and it hath many other names



names recited by mee in my *Commentaries* upon the Anatomy of *Mundinus*.

Its substance is fleshy and Pannicular, which is made more fleshy with its Muscles, there is in it some fatnesse toward the outside, in it there are many broad and long Fibers, few Oblique, the long are without, and within, helping the expulsion by drawing downward.

In it there are Four Muscles, one is in its extream Orifice; being mixed with the *Cutis*, and dispersed throughout with it; which constringeth the *Anus* on every side, by which means it cometh to passe that the dung may bee wholly cleansed from it, there is another Muscle more within, being raised toward a mans head; which Muscle hath two heads; and is here continued with the root of the *Yard*; the benefit of it is strictly to bind the extream part of the *Anus*: after them there is one pair of Muscles reaching over-thwart above the  
H others;

others, whose help is to raise the *Rectum* upward, which being mollified, there is caused the falling down of the *Rectum* without, between the Buttocks, for a certain distance.

In the extreimity of this Intestine there appear many Veins, in some notable, in some hidden which are called *Hemorroidales*, flowing by fits, which consider.

Those Veins have their beginnings from the branches of the Vein *Chilis* descending, nourishing the muscles of the *Anus*; many do use the Flux of them instead of Purgation, neither are they made very weak by it.

The helps of the *Anus* are to bring forth the Dung in due time, its muscles help the *Parastata* in the sending forth of Sperm in Copulation, whereof it is a sign, because some are at once copulating and avoiding excrements. They also help the Bladder in the sending forth the Urine.

The *Anus* suffereth passions of all

all sorts; all which are hard to be cured; and amongst the rest the extreimity of the *Rectum* falleth down; and in like manner the Matrix, which wee bring back by Stiptick means; there are also bred *condylomata* or certain little swellings; The *figus*, and also *fungi*, likewise *Marisca*, and *Ragadas* or *Ragadia*, which are wont to proceed of Inflammation; yet sometimes a lascivious wantonness of Luxury and Burning Lust doth cause these Diseases, in both Sexes; seeking by-ways, nature being neglected, nor without the injury of it, and the Divine Majesty.

*Of the Matrix, not pregnant.*

*Matrix a  
matre quæ  
a materia  
dic. quod  
ibi materia  
speciem  
conseruan  
inscribitur.*

THE Members contained in the Lower belly of a man, being seen, I pass unto the Anatomizing of a woman, in which the Anatomy of the Matrix is to be seen, and of their Testicles, with the Seminary vessels, and their Bladder.

The Matrix which is also called *Vulva*, hath two parts, to wit, a Receptacle, or *Sinus*, or hollownes, and *Cervix*, or *Collum*, a Neck, and it is a Member created of Nature for increase; the substance of its Receptacle is Sinnowy, mixed of the Chords of a Ligament and confused flesh, therefore it is a little sensible, and it is compounded of one onely Tunicle, circumvolved with the *Peritoneon*, and it is Sinnowy, that it might bee extended in Copulations, and that it might bee gathered together to a little quantity in the Birth; also all its hollownes is moved to the Center in the receiving of the Sperm, and embraceth and toucheth it with its sides.

But the substance of its Neck is of Lacertous flesh, as it were, Cartilagineous, having wrinkle upon wrinkle, which do give delight by Friction in Copulations; this part is sensible enough.

Its hollownes is called *Uterus*,  
and

and *Venter*, and *Receptaculum fa-*  
*tus*.

Its fastning which is the Ori-  
fice of the Neck, is called, *Puden-*  
*dum Muliebre*, and *Vulva*, and *Na-*  
*tura*, and *Os Genitale*.

In this Neck is the Yard placed  
in Copulations.

Between the Neck and the Re-  
ceptacle within, is a certain pel-  
licular substance, fleshy, sensible  
enough, perforated in the middle,  
that may be dilated and constring-  
ed, called *Os Matrix*, the Mouth  
of the Matrix, having the form  
of a Mullet's head, otherwise of *Ce-*  
*phalus*, or of the Tench fish, or of  
a new bred Puppy; which in Co-  
pulations, and Births, and *Men-*  
*strues*, is opened by the order of  
nature, but at other times, especi-  
ally when it is pregnant, it is so  
shut, that a small needle cannot  
enter into it, unless with vio-  
lence.

The Shape of its Neck is very  
long, round, hollow, it is as much  
unviolated as is the Yard of him  
that doth copulate therewith, but



in a Virgin it is less.

This hath about the middle of it, the Virginal pannicle, like a Net woven together of small Ligaments, and very many Veins, which one violated, is without, because it is broke in the first copulation with a man; this Pannicle is called *Eugion*, and *Cento*, and *Imen*.

To the extreame part of the Neck, on the sides are added Skins, which are called *Præputia*.

Within the Neck, a little towards *Os Pectinis*, doth enter a short Neck of the Bladder, whose Orifice is shut up of certain small, fleshy, and pannicular Additaments, of which, and of the aforesaid *Præputia*, by reason of the Ayr, there is caused some noise in making water.

The Shape of the Receptacle is Quadrangular, with some roundness, hollow below as the Bladder.

In the Receptacle towards the Neck, there is on both sides one Ligamental additament fastned to the

the Back toward the *Ancha*, having the Shape of a Snails horn, therefore these are called, the Horns of the Matrix.

About these Horns on both sides, is one Testicle, harder, and less than in a man, not perfectly round, but prest together like an Almond; in them are ingendred Sperm, not gross, as in a man, nor hot, but watery, thin, and cold.

Those Testicles have not one Pannicle, in which they may be both contained, as is the *Scrotum* in a man, but each hath a proper Pannicle, risen from the *Peritoneon*, fastning them about the Horns; and each of them hath one small muscle, of which it is moved.

In those Testicles are implanted the aforesaid Seminary vessels, which being called *Preparantia*, descend from the *Chilis*, and from *Aorta*, and from the Emulgents; from thence do reach other Vessels, named *Deportantia*, continually spreading themselves unto the Receptacle, and they bring Sperm within the hollownes of the Matrix.

The Orifices of these Vessels are called *Fossula*, and *Cotilidones*; through them flow the *Menstrues*, from them doth the young one draw Nutriment by the Umbelical Veins and Arteries fastned to the aforesaid *Fossula*.

In a woman there are not the Vessels *Parastata*, nor the Vessel *Epididymum*, because in a woman the soft Vessels are not offensive to the Testicles, as they are in a man through their hardness.

The whole Matrix with its Testicles and Seminary vessels, is like to the Members of Generation in men: but the Members of men are compleat, expelled forth by reason of their heat; but of women they are diminished, retained within for their want of heat.

And the Matrix is as it were the converted Instrument, for the Neck of the Matrix is as the Yard, and its Receptacle with the Testicles and Vessels is even as the Cod.

For in the Cod being turned in,

in, there is a hollownes within it; and without it, being likewise turned in, there do lie the Testicles and Seminary vessels, as in the Receptacle of the Matrix, but the Testicles and Vessels of men are greater.

The Situation of the Fissure of the Matrix is between the *Anus* and *Os Pectinis*, and the place which is between both Orifices, is called *Perinion*.

The Neck ascendeth above from the Fissure through the Belly, unto the Receptacle, whose place is between the *Rectum* and the Bladder; all these are placed long-waies in the hollownes of the Little trough.

The Quantity of the Receptacle in Damosels, is small, and less than their Bladder; neither is its hollownes filled, unless with the filling of the increase of the body, whereof it is: but in full grown (unless it be great with young) it is not much greater than may bee comprehended in a hand; but it increaseth by reason of the

*Men-*

*Menstrues*, having walls, as it were, fleshy, thick, and gross, but in one pregnant, it is very much stretched, and thin, appearing more *Sinnowy*, and then it ascendeth towards the Navil, more and less, according to the quantity of the young one.

It hath onely one concavity or Cell, which nevertheless somewhat toward the bottom of it, is divided into two parts, as if they were two *Matrixes*, both ending at one Neck.

In the right side of it, for the most part are fastned the Male, in the left the Female.

It hath Colligancy with the Brain by Nerves, with the Heart by Arteries, with the Liver and Teats by Veins, with the *Intestine Rectum* by Pannicles, with the Bladder by the Neck of it, which is short, not penetrating without, as in a man; with the *Anche* by the horns (but of the horns above) The Receptacle is every way loose, and therefore falleth to the sides, and sometimes  
its



its Receptacle goeth altogether forth out of the body, through the Neck of it.

The Number of it is apparent, and perhaps hee doth not erre that saith there are two Matrixes, because there are two Concavities as two hollow hands, touching one another, covered with the self-same Pannicle terminated at one Chanel,

And that you may somewhat satisfie your self, of its Figure, Place, and Situation, you may see the under-written Figures immediately following; to the seeing of which let not him come which is not ingenuous and expert in Lines, and Shadow, or in Picture, which doth much help Physicians, and many other Artificers; the Native complexion of the Matrix actuated by the Influence, is hot and moist; its helps are to purge the body of its natural bloody Superfluity; but principally to conserve the *Speci-*

It may suffer every kinde of dis-

disease; it often falleth down, and it may all bee drawn forth out of the body, the health remaining. One Matrix being corrupted, I saw drawn wholly forth by my Father in the Land of *Carpus*, which was cured, and lived long.

I also at *Bononia*, drew forth one other wholly, which was cancrenated in the year one thousand five hundred and seven, in the Moneth of *May*, which lived in health.

One other being corrupted, my Kins-man (by my brother) *Danianus*, drew wholly forth in my presence, in the Assembly of many Doctors and Scholars, *anno Domini* one thousand five hundred and twenty, the fifth of *October*, that last by name. *Gentilis* was the Wife of *Christopher Briantus* of *Mediolanum*, inhabitant at *Bononia*, in a Country called *Lo Inferno*, which at that hour one thousand five hundred twenty two, the tenth of *November*, was found, and exercising household affairs.

If

I Place these 4 figures of the  
Matrix betweene 108: and 109: pages



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If you seek greater things, look in my Commentaries upon the Anatomy of *Mundinus*, and there you shall have of the pregnant Matrix, and many other things. And these things are sufficient for the Anatomy of the Lower Belly.

*The first Figure of the Matrix.*

**Y**OU have in this Figure the Matrix with its Horns at the sides, under which in their natural place are the Testicles fastned to the Seminary vessels, which vessels, as you see, are terminated at the body of the Matrix: and they have their Original above, about the Region of the Reins, from the Emulgent, and from the Vein *Chilis*, as it is said above; and this Matrix is figured great, as if it were pregnant. . In the former part of which is the Bladder, with its *Uritidian* pores, and the Neck of the Bladder is terminated in the Neck of the Matrix, fastned a little above, which is called *Vul-*

*va;*



va; and the Testicles in this Figure are in their due place; but these things are better seen in the Anatomising of one woman great with Childe, and also one not with Childe.

*The second Figure of the  
Matrix.*

**Y**OU have in this Figure the whole Matrix with the Horns, and the Testicles above the Horns, and you see how the Seminary vessels go to the Testicles, and from the Testicles to the Matrix, but the Testicles are not in their natural place, because their natural place is below the Horns, but they are set above the Horns in this Figure, that the Seminary vessels may the better be seen to enter into them, and you shall see in this Figure, how the Mouth of the Matrix is above the Neck, which Mouth is that Hole which you see above the Neck of the Matrix.

*The*

*The third Figure of the  
Matrix.*

**Y**OU have in the Belly of this Figure the Matrix opened, in which you see some black pricks, shewing the Heads of the Veins, which are called *Cotilidones*. You have besides the Matrix turned in without the Belly, and it is that Figure over which you see the Finger, a token of the present Figure, and in the bottome of the Matrix is a certain depression, as you see, which is that that distinguisheth the right side from the left; neither may there another division bee found in the Matrix; and them black pricks are the *Cotilidones*; and you see how the Neck of the Matrix is without *Cotilidones*; and you see how the Neck is like to a mans Yard.

*The fourth Figure of the  
Matrix.*

**B**Ecause things ten times repeated, are wont to please, you have

have here two other figures of the Matrix, whereof one is turned in, in which you see how in the Receptacle throughout are many black prints; betokening so many *Cotillidones*, which nevertheless are not in the Neck; in the other you see the natural Matrix with the Testicles and Spermatical vessels, and the horny Ligaments, with which it is fastned to the *Anche*; you see also the Neck and Mouth, through which the *Menstrues* and the young one go forth, and the seed of man entreth in.

*Of the Anatomy of the  
Middle Belly.*

**T**He aforesaid things being seen, dissect the Middle belly, in which are the Vital members, with which also for the better orders sake, you shall see some members of the former part of the Neck, and some parts of the Face within and without, before the upper Belly be Anatomized.

The Parts first to bee seen,

are

are the Members of the Breast; which is called, *Cassus, Clibanum*, and of some *Thorax*; for in that are parts containing, and contained.

And of the parts containing (as in the Lower belly) some are common, some proper, and some more proper.

The parts common, are all the parts compassing the emptiness of the Breast; whereof some are before, some on the sides, and some behinde.

But in that Belly (neither is it so in the Belly of the Natural members) are placed the upper parts, neither are the lower determined by them, as in the Upper belly: because the parts before, on the sides, and behind, in the Belly of the Natural members are united, and do make the lower part of that, and in like manner make the upper part of this Belly; for this is terminated in its upper part; but that in its lower part, as in a point, and this is compassed about of the aforesaid

parts above, and that below. But the *Septum transversum* or *Diafragma* doth mediate between them, and maketh the uppermost part of the lower Belly, and the lowermost of the upper ; but because the *Septum transversum* is common to both Bellies, therefore it is not properly and determinately put for any containing part of the aforesaid Bellies; but Authours do place it among the parts contained ; nevertheless it is a part contained and containing ; and it is called contained, in as much as it is within the hollownes of the body, and it is containing, because on the upper part it containeth the Natural members, and on the lower the Vital.

I say therefore, that the common part of the Middle belly before, and on the sides, is called *Pectus*, but the hinder part is called *Summum dorsi*, the top of the Back ; and they that place the Neck with the Back, do name this middle part of the Belly, the middle of the Back.

But



But the parts proper, some also are before, some on the sides, and some behinde; those which are before, are commonly appointed three, *to wit*, an upper, a lower, and a middle.

The upper is a place, where immediately under the Neck are joyned together two Bones, both of them reaching side-waies toward the Shoulders, called the two Lateral *Furculae*; and this part is named the upper *Furcula*, taking its name from its figure and place, taking up a little room, especially in the length of the Breast; and this place of some is called *Jugulum*, and *Clavin*.

Immediately under that is the middle part, properly called *Pectoris*, so called, *Quia pexa est inter* *Isido: vi.  
Rider: de  
pectore.*

*Eminentes Mamillarum partes*, because it is hairy between the Eminent parts of the Teats; and this part is downward from the first aforesaid part, almost as far as the *Septum transversum* in length, but in breadth as much as is the breadth of the bones of the

Breast, the Ribs excepted.

But the lower part, is the place where the aforesaid bones of the Breast are terminatad about the Region of the *Septum transversum*: and because those bones reach on the Sides, making likewise a Fork, therefore this place is called the lower *Furcula*, in the middle of which is *Cartilago scutalis*, called *Pomum granatum*, because it is like to a part of the *Balaustium*, that is, of the flower of the Pomgranate.

But the lateral parts are termed the Ribs, and the Sides, and the Region of the Teats.

But the posterioir parts, some are in the middle, and some on the Sides; those in the middle are called *Interscapilium*, & *Metaphrenon*, & *Noton*; those on the sides are called *Scapula*, *Spatula*, & *Scapilium*; but some do call the lateral parts with those in the middle, *Metaphrenon*, & *Noton*.

But the parts more proper, some are also before, some on the sides, and some behinde.

Those

Those which are before, are first the Skin, the Fat, some muscles, the bones and Cartilages, and the Pannicle *Pleura*.

But the lateral parts are the Skin, the Fat, the substance of the Teats, many Muscles, Ribs, and also the Pannicle *Pleura*.

Last of all are the parts behind, to wit, the Skin; some fat; flesh musculous, and some simple; not musculous, filling up certain Vacuities of the bones, twelve Spondiles of the Ribs, or of the Breast, and the Pannicle *Pleura*.

The parts contained, are the muscle *Diafragma*, called *Septum transversum*: which according to some is to be numbred among the parts contained of the Breast, in as much as its principal operation is to serve the Heart by reason of its motion, by which it moveth the Lungs: there is after that the Pannicle *Mediastinus*, *Capsula Cordis*, the Heart, with his Artery *Aorta*, and the Lungs with their Vessels, the *Vena Chi-*

lis ascending, the Nerves descendent, and the ascendent which are called *Reversivi*, the Glandule called *Timum*, & *Morum*, the *Gula*, that is the passage for the meat from the mouth to the Ventricle, with the Pannicles covering the aforesaid Members.

The substance of this Belly is pellicular, fat, bony, cartilagineous, musculous, and pannicular.

The Bones of it are not united, as in the Head, but divided, that the Breast might bee obedient to the motion of breathing; and therefore for its motion there are muscles in it; *Galen* said 7 *de Utilit*: If the Breast were made of muscles onely, they would fall upon the Heart and Lungs; that therefore there might bee some space between, and that in like manner the whole Organ might be moved, the muscles are placed to the Bones by course.

This Belly called *Pectus* is great in quantity, because it serves many and great members, yet it hath



a greater hollownes behind than before; the beginning whereof toward the hinder part is, from the first Spondiles under the Neck unto the *Septum transversum*, as much as twelve Ribs contain: but before, it taketh up onely the part contained between the upper *Furcula*, and the lower inclusive-ly.

In a man the Breast is broad, not carinated, as in the greater part of Beasts, yet it is broader in a man than in a woman; but for the bearing of the young, the lower Belly is greater in a woman than in a man; and for this reason the Region of the Reins, of the bone *Sacrum*, and the *Ancharum* in a woman is very large.

The Shape, and Number, and Situation of the Breast appears, but the inward concavity of it is like to the hollownes of half an Egge, cut obliquely through the breadth, the part whereof is sharper toward the Neck; it is also like to the nail of an Oxes hoof (as is the figure of the Lungs.)



It hath Colligancy with the whole body; its complexion is according to its parts; its native complexion actuated through influence is hot; the helps of it are principally to keep the Heart, and the Lungs: it suffers passions of all sorts,

*Mamilla*  
diminut. ex  
*Mamma*  
que ex voce  
infantium  
dicitur, ut  
etiam Pa-  
pilla ex voce  
Pappas.  
\*The Au-  
thor taketh  
*Mamilla*  
from Ma-  
millana, a  
kinde of  
Figs like  
Dugs.

*Of Mamillæ, or the Teats.*

**I**N the former part of the Breast toward the sides are two round Members, taking their name *Mamilla* from their \* Figure, called of the Ancients, *Rume*. In the middle of each of them there is one little Knob, which is called *Papilla*, through which the Infant feeds, about which there is a Circle, which is red or roset, and sometimes black, called in Greek, *Fos*. The substance of these is of Veins, Arteries, and Nerves, between which there is a hollowness, which glandulous flesh doth fill up, being white, without sense, and by reason of its whiteness, when blood staiech in them, it is made

made white, and is turned into Milk; and the Teats turn blood to whiteness, and make Milk, as the Liver turneth *Chilus* into redness, and maketh it blood; for every one of them turneth the humour in them contained to its own likeness in nature and colour: of this blood, being made white, the one part nourisheth the Teats, and the other is Milk, and this is a profitable superfluity.

Unto the Teats do come their Veins and Arteries, descending from the Region of the Armpits about the Ribs; and also from the Region of the *Pecten* do come Veins through the *Abdomen*, which you have kept above, those Veins and Arteries do best appear in a body very lean, but in a fat they are hidden; but they are very well seen in a *Fetus* of three or four moneths.

The number of the Teats, and the quantity appear, yet they are greater in a woman than in a man for the ingendring of Milk; their Situation is in the Breast, because  
it

it is broad, not carinated, in which they may fitly bee placed; and also becaule the superfluity of the Members above passeth not into Hairs, neither into the Teeth, nor into the Horns, as in brute Beasts.

They have Colligancy with the Brain by Nerves, with the Heart by Arteries, with the Liver and Matrix by Veins; but they receive the greatest part of the blood from the Matrix, of which the Milk is made, therefore those that give suck, have not their *Menstrues*, unless seldome, and few; and in those that have not their *Menstrues* in due time, their Teats swell; also the Teats do swell, and are pained a little before the time of the *Menstrues*, because the Matrix, and the Veins therewith united, are full.

The helps of them in a man are for comeliness, and for the defence of the Members of the Breast; and they reverberate heat to the Heart, and sometime there

there is Milk made in a man by reason of the abundance of Nutrimēt, especially in one that hath great and strong Teats; in a woman they have also the aforesaid helps, but they are principally for the ingendring of Milk, that the new-born Childe might bee nourished therewith, untill it can swallow solid meat; and Milk is a proportioned nutriment for the new-born Childe, because it is made of blood, by which it was first nourished in the womb; they suffer diseases of all sorts.

*Of the Muscles of the  
Breast.*

**T**He aforesaid things being seen and noted, you may excoriate the Skin of the whole Breast, leaving the muscles in their place, and incise the Teats, that you may see their substance, especially their flesh, in which are Veins and Arteries dispersed throughout, and ye shall observe the

*Pectus  
quasi pectus  
quod ex co-  
stis quæ ve-  
luti firma-  
mentum pe-  
toris sunt,  
compactum  
aut pectina-  
tum fit.  
Gasp.  
Baubinius.*

\*Papilla.

the \* nipples to have very many small holes, from which the Milk goeth out; at which holes (according to some) the extremities of the aforesaid Veins are terminated, through which the Milk goeth forth; and according to others the Milk goeth forth from the Spongiosities of the flesh of the Teat terminated at the holes of the Nipple, and not immediately from the Veins; both of them are probable.

These being seen, you shall note in the Breast many muscles, which move the Breast voluntarily; although the Breast may also be moved naturally, to wit, according to the motion of the Heart and Lungs, as we have said in our Commentaries; whereof some are without, some between the Ribs, and some within the Breast.

Of those without; there are two under the upper *Furculaes*, continual with the first Rib, which do reach to the head of the *Spatula*, and with them are united



ced one other pair, whercof every odd is doubling the first pair, and making it into two parts, the upper part whereof is continued to the Neck, and moveth that, but the lower moveth the Breast, and this pair is continued with one pair, which is continual with the fifth and sixth Rib.

After that is another pair in the hollownes of the *Spatula*, continued with one pair coming from the Spondiles, even unto the *Spatula*, and all they are, as it were, one pair, which are continued with the hinder Ribs.

After that is another pair, risen from the sixth Spondile of the Neck, and from the first and second upper Spondile of the Breast; continued with the same Ribs; and all those muscles do dilate the Breast.

After that there is one other pair extended under the roots of the upper Ribs, which descending, is united with its extremities to one pair, which is about the lower *Furcula*, continued with the

the long muscles of the *Abdomen*; above which pair are two pair which cover it, and all they binde the Breast.

But the muscles within the Ribs are dilating and constringing, differing among themselves in their work; and those which are between the Ribs, between Rib and Rib, are four, to wit, two muscles toward the outside, and two toward the inside, which ye shall know, separating them lightly, by the going of their Fibers; the two first uppermost have their Fibers transverse, and do dilate the Breast; but the second, which are below, have their Fibers broad, and are constringing.

But the muscles within the Breast, is onely one, to wit, the *Diafragma*, or *Septum transversum*, which when it resteth, draweth the Breast together, (but by accident) and when it is moved, it doth dilate it, yet the motion of the *Diafragma* is compounded of voluntary and natural.

The

The number of which in all is one hundred and five muscles, the aforesaid muscles of the Back and Neck excepted, to wit, the two first under the upper *Furculaes*, and two other continued with the fifth and sixth Rib; after that two muscles coming from the hollowness of the *Spatula*, continued with the hinder Ribs; after that two from the sixth Spondile of the Neck, and from the first, and from the second of the Breast continued with the same Ribs; and those are eight in all, all dilating; there are also so many constricting (the *Diafragma* excepted) which also dilateth.

And of them which constrict, first, there are two under the upper Ribs, and two about the lower *Furcula*, above which are four others covering them, all which together with the *Diafragma*, are 17, afterward there are between the twenty four Ribs twenty two spaces, and for every space are four muscles, which are in all between the Ribs eighty eight, and together

ther with the aforefaid feventeen, they make the number one hundred and five muscles.

But that all they may well be feen, the *Spatulae* must bee alfo excoriated, and the Back; and first you shall see the outward muscles, secondly the muscles between the Ribs; the *Diafragma* shall be feen below in its place; but these things are spoken more largely of mee in my Commentaries upon *Mundinus*.

Mark, O Reader, that the motions of the Breast are four, to wit, violent expiration, and unviolent, and inspiration unviolent, and also violent, to which the aforefaid muscles are obedient.

In the unviolent motion of inspiration, do serve the muscles between the Ribs; dilating the Breast; also the motion of the Heart and Lungs do serve it, for whilst the *Diafragma* is moved, it draweth the Lungs, which is filled with Ayre like a Breast plate, and dilateth the Breast, the dilative

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rive motion of the heart helping it; also the two first muscles which are about the upper *Furculaes*, do help that motion, and that motion is mixed of voluntary and natural, the natural excelling.

But to the violent inspiration, do concur with these aforesaid, all the other muscles dilating the Breast, together with the *Diafragma*; and that motion is also compounded of natural and voluntary, the voluntary abounding whilst the Heart remaineth in strength.

But to the unviolent motion of expiration, do concur (though easily) the inward muscles of the Ribs, and all the other constringent muscles; but this motion is chiefly natural, because it is caused of the Heart, and of the Lungs. But to the violent motion of expiration, the Heart and the Lungs do help, but all the constringent muscles do principally help, and likewise the muscles of the *Abdomen*.

By that which hath been said, doth appear the affinity of the  
K muscles



muscles of the Breast, and their figure, place, quantity, and substance; their number is spoken of; their complexion is hot and moist; their helps are spoken of; they suffer passions of all sorts.

*Of the Bones of the Breast.*

**T**He bones of the Breast are not one continued, as in the Head, but they are many, touching one another, that they might be dilated; those which are before, and on the sides, are properly the bones of the Breast; but those which are behinde, are more appropriated to the Back; the lateral bones of the Breast are called of the Latines, \* *Coste*, they are called in Greek, *Pleuræ*, or *Pleuron*, and *Chondron*; in number they are twenty four, in each side twelve, of which the ten lowermost (five on each side, in Greek called *Rostas*) are shorter than the rest, and not much bony, but cartilagineous, which of the Latines are called *Mendaſe*, and *Incompleta*, the

*Costæ ut  
Custos quia  
ab ipsis  
Viscera  
Custodiantur,  
vel a  
coasso.*

the false Ribs; but the uppermost are complete and whole, and are called *Costa vera*, or the true Ribs, which in each side are seven, with which on both sides is continued the aforesaid bone of the Breast; which bone in the middle is hard, and toward the Ribs cartilaginous, because between the bone of the Breast and the Ribs, there is a Cartilage.

This bone is (according to some) compounded of seven bones, to which on both sides are united the seven true Ribs; and according to some others, it is of fifteen, that is seven on each side, and one in the middle; and according to others, it is of twenty one, to wit, of seven in the middle, and of seven Cartilages on both sides, to which the true Ribs are united.

Their figure is crooked, like an half-Moon; their substance, and quantity, and place appear; the Ribs have Colligancy with the first twelve Spondiles below the Neck, and with the aforesaid bones

of the Breast, and with the Pannicles covering them; their complexion is cold and dry; their helps appear; they may suffer passions of all sorts.

You should see the Anatomy of them best, if in one undivided, you would attend them onely, not having respect to the Spiritual members.

### Of the Pannicle Pleura.

*Pleura non  
man tenet  
de costis ita  
dicta, sub  
quibus lo-  
cum habet.*

**B**etween the Members containing, is placed a Pannicle immediately cleaving to the Ribs, and the bones of the Breast, which is called *Pleura*, whose substance is Sinnowy, hard, and subtile, from which do arise the Pannicles, immediately covering the Members in that Belly; its figure is plain, extended throughout in the circumference of the Breast, and it is also extended about the *Diafragma* throughout, toward the upper part of it, firmly cleaving to it; its quantity appears from that which hath been said; it raketh

keth up the whole concavity of the Breast, excepting a certain part of it before, which is taken up of the *Mediastinus*.

Its number, and situation, Colligancy, and complexion, are apparent; its helps are to cloathe and defend the Members of the Breast, and to fasten its bones together; and to mediate between the bones and the Members contained in the Breast, lest that which is soft, should be hurt of that which is very hard; it endureth passions of all sorts; you shall not see that Pannicle perfectly, unless incising the Ribs, you open the Breast, in that manner which shall bee spoken of below.

Διαφράγμα  
μα α δι-  
αφράτ-  
τεν in-  
tersepire  
itaq; la-  
tine dici-  
tur Sep-  
tum

Of the Septum transversum, or  
Diatragma, the Midriff.

THE parts containing being  
seen, the contained do follow;  
and first, is to be seen a Pannicu-  
lar muscle, called *Diafragma*,  
Secondly, the Pannicle *Mediasti-*  
*nus*. Thirdly, the Pannicle cal-

transver-  
sum in-  
ter spi-  
ritualia  
& natu-  
ralia di-  
videns.



led *Capsula*, and *Receptaculum Cordis*, the Receptacle of the Heart; after those Members shall be seen the Heart, and the residue of the parts contained in the Breast.

I say, that within the body between the upper and the middle belly is a certain substance pannicular and fleshy, fastned to the Back about the twelfth Spindle; which is fastned to the Back toward the fore-part, alwaies by the extremities of the false Ribs, untill it is terminated and bound to the end of the lower *Furcula* of the Breast; and so it divideth the natural members from the vital; and this member is called *Septum transversum*, and *Paries*, and *Phrenes*, and *Diafragma*; and *Galen* in his Book *de Voce & Anhelitu*, calleth it *Percordium*, which is a Muscle, and not a Pannicle, yet it executeth the office of a Pannicle in defending the Heart and the upper members from the stinking vapours fuming up from the members of nutrition; its fleshy



fleshy part is at the extreame parts of it; and its Chord is in the center of it, united to the Lungs, because by that Situation it serveth to move it.

To this is the Pannicle *Pleura* fastned throughout toward the upper part; and in the same manner the *Sifac* is fastned to it below; it is perforated toward the Back by the Vein *Chilis* ascending, from which there do remain in it two Veins nourishing it, one on the right, the other on the left; the Artery *Aorta* descending, doth also perforate it toward the Back; and the *Gula* or *Merum*, which is immediately fastned to the Ventricle toward the Lower Belly.

Its shape and quantity appear; its Substance, Colligancy, and Situation are spoken of; yet it is fastned to the Heart by small Arteries, and to the Brain by three pair of Nerves, whereof two come from the *Nuca*, and one from the Brain, and those appear sometimes notable.

Its complexion is hot and moist; its helps are in part spoken of; yet *Galen* said; that in it is the beginning of respiration, and of all the strength of the body; and these helps hee first found out; it helpeth also in expelling from the Stomach, and from the Intestines, and from the Matrix some matters contained in them; it also provoketh laughter (according to some) by moving the minde in ticklings beside the will. It suffereth passions of all sorts; its solution is deadly.

*Media-*  
*stini*  
*eo*  
*quod hunc*  
*ventrem*  
*medio di-*  
*vidit.*

*Of the Mediastinus.*

**A**FTER the Anatomy of the *Diafragma*, cometh the *Pannicle Mediastinus*, so called, because it divideth the void places of the Breast in the middle, according to the length; it hath also other names; for the seeing of which, first, separate the bones of the Breast from the Ribs, on the right side, and on the left; in like manner (lest you should hurt the parts

COM-

Contained in the Breast) separate also the *Diafragma* before, from the bones of the Breast; and you shall observe that Pannicle to divide the Breast from the bottome to the top, and from before backward: its substance is pannicular, its figure and quantity appear, its Situation is spoken of; in number they are two Pannicles, notably distant toward the fore-part, having in them a notable hollownes; but toward the Back it appeareth one onely; it hath Colligancy with the *Pleura*, from which (according to some) it hath its Original; it hath also Colligancy with the *Diafragma*, and with the Back, and with the Lungs, by means of a Pannicle risen from the *Pleura*; it hath also Colligancy with the *Meri*, witness *Avicen*, and also with the bones of the Breast; it hath Colligancy also with the Brain by Nerves, with the Heart by Arteries, with the Liver by Veins; its complexion is cold and dry; its helps are to divide the breast

Breast and the Lungs through the middle, that if hurt should happen to one part, it might not happen to the other; it also defendeth the upper *Furculnes*: from it there is also a conservation of the heat of the Heart; it endureth passions of all sorts.

In qua ut  
in capsula  
Cor inclu-  
ditur.

Of the Capsula Cordis.

**T**HE afore said things being seen, you must put away the foremost bones of the Breast, separating them from the former part of the Pannicle *Mediastinus*, which leave in its place, untill you have seen the Anatomy of the Lungs; take away also the tops of the Ribs on both sides, that yee may have large room for the seeing of the other parts, and in that Section you shall well consider the bones of the Breast, and also the *Pleura*; but leave the *Diafragma* whole, where you can, fastned in its place, especially to the Back, that the Nerves coming to it from above, may bee seen, and



and that the Colligancy of the *Gula* or *Meri* with it might be seen.

Those things being taken away, you shall see the Lungs, in the middle whereof is one Pannicle, fastned to the *Mediastinus*, which is hard and gross, that it might the better defend the Heart from outward things; the shape whereof is even as the Bowel contained of it, called, the Heart, which is hollow, and like a Pouch, and therefore it is called *Capsula*, a little Coffin, in which there is the Heart it self, and water in a notable quantity bedewing it, and hindring, lest it should be dried up by its strong heat; which if it be exhaust, there is caused *Morbis Cardiacus*, or the passion of the Heart; whereby a living creature is brought to a consumption, as it hapned to *Galens* Ape; this *Capsula* is very sensible; and perhaps was perfectly bred at the first with the Heart. Its substance, situation, shape, and helps have been spoken of; in number it



it is one, its quantity appeareth, it is fastned to the pannicular roots of the Heart, and to the *Pleura*, and *Mediastinus*, and *Diafragma*, by their Pellicles, to the Liver by Veins, to the Heart by Arteries, to the Brain by Nerves; its native complexion is cold and dry, but influent, hot, because it is next the Heart; it suffereth passions of all sorts.

Leave in their place the aforesaid *Capsula*, and *Mediastinus*, and *Diafragma*, untill you have seen the Anatomy of the descending Nerves, which as they descend to the lower belly, do send branches to the aforesaid Members, as it shall be spoken hereafter.

*Cor a cura  
quia in eo  
omnis solli-  
citus &  
scientia du-  
sa manet.*

### *Of the Heart.*

**A**fter the *Capsula*, the Heart doth occur; in the Anatomy of which, and also of the Lungs, and of some parts of the Head and Neck, I will proceed more largely, by reason of their artificial composition and operation.

For

For the dignity of the Heart is of more value than other parts, for of al the members it is the most principal, and is called, *Sol Microcosmi*, the Sun of the little world, for it illuminateth the other members by its Spirit, for this hath a special heat; it doth certainly pant, and hath motion as a living creature; therefore it is reported to bee the first thing formed in young ones in the womb, after that the Brain and Liver, the eies (as it pleaseth some) but very slowly; but that these do dye first, but the Heart last; this member onely is not putrified by hurts; neither is it free from the punishments of life, but being notably hurt, it presently bringeth death, and the life remaineth in that, though the other parts be corrupt; and for this cause that creature liveth not, in whose Heart there may be found a hurt, as it is in other parts.

And creatures which have a little Heart, are bold; but they are fearful which have a great one; as by the proportion to Mice, to the

the Hate, to the Affe, to the  
Stagg, and to all fearful creatures,  
or through fear hurtfull; but a  
great Heart endued with much  
Spirit, doth make them more bold  
than others.

It is reported, that some men  
have been born with a hairy  
Heart, and these are more bold and  
stronger than others; as for Exam-  
ple, *Aristomenes Messanias*, which  
slew three hundred *Lacedemoni-  
ans*, and hee, when he was woun-  
ded and taken, at length escaped,  
getting away through a Cave of  
Foxes; being taken the second  
time, hee being adventurous, e-  
scaped; the third time being en-  
snared, the *Lacedemonians* cut o-  
pen his Breast for the cause of  
seeing his man-hood, and his  
Heart was found hairy. All crea-  
tures also have a Heart that have  
a Midriff and blood; Witness  
*Aristotle 2 de Hister. cap. 15.* but  
in some it cannot bee discern-  
ed by reason of its smal-  
ness.

The Situation of the Heart  
is

is in the middle of the Breast within the Lungs; in man onely it declineth to the left Papp, with its lower part; lest it should meet with the bones of the Breast, which are not carinated, as in Beasts, but compressed into breadth.

It hath the shape of a *Pyramide*, but the gibbous part is not chiefly such, because it is hot, following the form of fire; but because it is a perfect mixt body, having life, it possesseth a shape competent to its work.

Its upper part wherewith it reacheth to the upper members, and is fastned to the Back, is broad; and this part is the more noble of the parts of the Heart, because the life of a living creature is conserved by the means of two Orifices of Arteries of the left side, coming from that part; but the bottom doth gather it self into a sharp figure, and goeth out almost into a sword's point; and in the former part it is eminent.

Also its gibbous part is toward the



the upper parts of the Breast; and it is of such a shape, that its upper and lower building might be good; and that there might not be a superfluity in it, apt to hinder its continual motion; and that in the end of it, it might be gathered into one point, that that which is hurt with the touching of the bones, might be the least of the parts of it, that it might take the less hurt.

Its substance is of simple flesh; every where solid, but it hath part of its point, and the left side of it of grosser flesh, that it might conserve the Spirit placed there; and that it might equal the weightiness of the blood contained in the right Ventricle with its weight, whose walls are lighter than of the left Ventricle.

In its hollow places are very many white Ligaments, (there being many Caruncles and Pellicles, or doors of the Vein *Chilicis*) and they are fastned to the *Vena Arteriosa*.

Also the Heart is involved in a sube



subtile and firm membrane, with some fatness, which do keep and strengthen the substance and heat of it, and being dried, they linder it.

In the top of it, where it cleaveth to the Back, are two rugged and hollow pellicles, called *Auriculares*, which are united to the houses or Ventricles of it, to wit, to the right and left, taking and keeping the superfluous Spirit, and blood, (like a good Steward) and restoring it in necessities.

Nature hath ordained those *Auricles*, that they filling up places of the Hearts greatness, might receive the Blood and Spirit sometimes over-flowing in the Heart, by which it might have had filled up the places of other members near unto it.

Also by its greatness it had been heavy, unfit for motion; and likewise if it should be very great, it would often be empty, by reason of the want of Spirit and Blood, and consequently weak as in fearful creatures, having a

L great

great Heart, to wit, wanting Blood and Spirit in the proportion.

Its roots are fastned to the top of it, which are solid, and hard, and as it were, cartilaginuous, that its continual motion upon these might be nimble.

In the Heart also are Fibers of many shapes, and placed after a diverse manner, that it might sustain continual and strong motions, which are natural, and not voluntary; and therefore there is not any lacert in it.

In the upper part of it about the outside, is one Vein, proceeding from *Chilis* obliquely, branching it self to the least parts towards the *Macro*, which nourisheth it.

There also are two pulsant Veins, proceeding from *Aorta*, spreading abroad toward the outside; one is in the same place wherein is the aforesaid Vein not pulsant, which giveth life to it; another is spread in the right Ventricle, and bringeth the vital virtue to it; it also concocteth and giveth

vethe life to the blood continually, entering in there, and by means of that the Liver is vented by the *Chilis* in its gibbous part, and conserveth its own vitality.

It hath a three-fold *Sinus* or hollow place, or little house, or Ventricle; the right is bigger than the left, and the left cometh unto the extreameity of its point; but the right is ended a little below that place.

Between them is a wall, gross and thick, called of *Galen*, *Diaphragma*, in which are many small holes, going from the right *Sinus* into the left, being broader from the right than to the left; those holes are dilated, whilst that the Heart is abbreviated and opened, and they are shut up whilst it is lengthened and shut, by this means the blood being rarified and prepared, goeth from the right unto the left, where it is compleatly turned into the vital Spirit.

These Orifices are counted of Physicians for the middle *Sinus*.

L 2 *Galen*,

Galen, witness Avicen, calleth that *Sinus*, a ditch, and passage, and not a Ventricle, that it might be the Receptacle of the nutriment wherewith the Heart is nourished; which nutriment is thick and strong, like to the substance of it, and it is the mine of the Spirit, begotten in it of subtile blood; and it prevaieth, that the more temperate blood is in the middle Ventricle.

But the right *Sinus* hath two Veins, one whereof whole Tunicle is simple, is bigger than the other Veins, coming from the Liver; it is called, *Chilia*, and *Concava*, and *Audax ascendens*, and this is very great, because it giveth blood to all the other Veins within and without the Heart, taking nothing from them, and therefore it bringeth more blood into the Heart than it can carry back; it is also very great, that it may contain much blood, oftentimes flowing and flowing back; and that it may bring it to the Heart in a short space, that it may the more com-

mo-

modiously be concocted by it.

This blood so concocted, is divided into three parts, one part of the subtile cholerick, being less than the rest, goeth to the nourishing of the Lungs.

The other more and subtler than the aforesaid, reacheth through the perforations of the *Diafragma* unto the left *Sinus*, where it is made Spirit.

But the rest of it not so subtile, and which is also far more than the rest, passeth through the same *Chilia* to all the parts of a living creature, and nourisheth them, oftentimes going in and out in the right *Sinus*, that it might be perfectly concocted, and might receive life.

Nevertheless *Avicen* placeth a fourth part in the middle Ventricle, which he saith is temperate, but this is unknown to my eyes; perhaps because in the middle wall of the Heart there pierceth blood, nourishing it; but it turneth into the substance of the thing nourished, because there (in my



judgement ) there is not blood without the Veins, unless in the right and left Ventricle.

The upper Orifice of this Vein is terminated at the Heart; whilst the Heart is dilated, and draweth the blood, it is opened, and whilst it is restrained, it is shut, expelling the blood; but it is not shut wholly, because in part it remaineth open: therefore nature alwaies retaineth in it (as a treasure and mine of heat) some portion of fervent blood. which at length changeth the Blood that cometh in into its own nature, by uniting it self with it.

And this Orifice is opened and shut of three Sinnowy or Ligamental Pellicles, whose colour is white, being fastned with their upper extremities to the walls of the aforesaid *Sinus*, by white and solid Ligaments.

Those Pellicles named *Ostiola*, are wholly opened at the inside of the *Sinus*, giving way to the blood, entring in, and are shut at the outside, but not wholly, and those

those Pellicles are solid and hard (and in like manner are the Pellicles of the arterious Vein) lest in the great and continual motions of the Heart, there might happen to them disruption, because they are fastned in the top of them to Ligaments, continually extending them.

But the Pellicles of the Artery *Aorta*, and of the Arterial vein, are less hard than they, because they are not any thing extended by Ligaments, and therefore they are without fear of breaking.

Another Vein goeth to the Lungs; the name of this is *Vena non pulsans*, or *quieta*, it is also called *Vena Arterialis*; and it is called a Vein, because it carrieth blood for the nourishing of the Lungs; and it is called *Arterialis*, because it hath two Coats, that it might be strong and compact, because of the Cholerick and subtile blood flowing in it, and lest it should bee broke by reason of its continual motion; in whose Orifice are three Pellicles or doors,

shutting themselves wholly within the *Sinus*, and opening themselves without, giving way to the blood going out. In the Dilatation of the Heart they are altogether shut, lest the blood should flow back unto the Lungs; but in the contraction they are opened, and the Veins cleave to the walls, neither are they any where else united by Ligaments, as the most are.

The substance of these is panicular; their shape is like to the vacuity which is within the letter C. They are therefore called *Ostiola C formia*; they have also that Circular form which a mans nail hath; which Pellicles are with their Circular part fastned to the body of the Vein.

But the left *Sinus* more noble than the rest (because the middle and the right do service first to it; it also excelleth the rest by reason of the Spirit contained in it) hath in the top of it two Veins: one not much less than the aforesaid great *Chilis*, which is as the stock

stock of a Tree ; distributed through the whole body ; and this is pulsant and double-coated, whose thicknes (witness *Erosinus*) is six-fold to a Vein; and this is called *Arteriā Aorta*, and the great Artery; whose inner Coat is harder than the outer, because it meeteth with percussio, and the substance of the Spirit, for the keeping of which it is intended.

That same carrieth the Vital spirit to the whole body of a living creature, and keepeth it in life.

For by that Artery (said *Galen*) all the members except the Lungs, do inspire and expire, lest their liveliness should bee suffocated; but the Veins are as the store-houses of meat, needing neither to diastolize nor systolize ; and therefore the body of them is subtile, porous, and soft; but the Lungs do inspire and expire by reason of the motion of the Heart and Breast.

This Artery or its branches, are seldom without the *Chili* accom-



panying them, and *Aorta* ascending a little above the Heart, is divided into two parts; one part is made oblique below, and descends, which in the Breast, and in the lowest Belly, sendeth forth many *Fibraes* from it, even unto the feet, and giveth life unto the members of them; under that branch being made oblique below, they do ascend by the left Nerves of the voice, which are called *Reversini*; and this place is called, *Flexor*, and *Girgilius*, of which it shall bee spoken in another place.

Another part ascending about a part of the Lungs, and the glandule *Timum*, giveth life unto, and filleth with Spitic the upper part of the Breast, the Arms, the Neck, and Head, and the parts of them,

And alwaies those Arteries which are fastned to the Veins, by many pores or little *Fibraes*, are united or joyned together, and the Vein receiveth into it the Artery, and on the contrary, the

Ar-



Artery the Vein; and from the Vein doth pass blood into the Artery, which is likewise made spiritual in necessity, and from the Artery into the Vein doth pass the Vital spirit, concocting the blood thereof, and conserving it in its virtue; also the Tunicles are nourished, and receive life from that which is contained in them; and this Artery is less above the Heart than below; Witness *Galen* 16 de *Utili*: Cap. 11. and it is made so because there are more parts from the Heart of a living creature below, than are above it; and this Artery is so much greater descending, than that which ascendeth by the Back, by how much the multitude of the lower parts exceedeth the upper; and in this is known not a little justice of nature: the Vein *Chilis* descending must also be bigger than the ascending for the same cause.

In the Orifice of this pulsant Vein, which is called *Auritium*, are also the three gates *C formia*, opening and shutting themselves at

at the same time, and in the same manner, in which the Arterial vein is opened and shut.

There is in that Ventricle another Vein, not pulsant, but quiet, called *Arteria Venalis*; and it is called an Artery, because it carrieth and recarrieth the Spirit or Ayr to the Heart, and from the Heart to the Lungs; from whence it is sent without the Breast; and it is called a Vein, because it hath a single Coat.

In the Orifice of this are onely two Pellicles or doors, fastned after the same manner, and incomplete; and they are opening and shutting themselves in the dilatation and constriction of the Heart, with which they make the doors, being in the Orifice of the Vein *Chilis*; also this Arterial vein carrieth more Ayr to the Heart than it can bring out; because by the blood and Ayr brought in by it, is the vital spirit engendred, which by the Artery *Aorta*, passeth to all the parts of a living creature.

By

By the aforesaid things the Colligancy of the Heart, and the complexion and helps of it appear; its quantity may be seen; in number it is one, although it is reported, that the Heart of an Ape had two heads, but prodigiously; it is also reported, that the Partridges in *Paphlagonia* have two Hearts. Every kinde of disease may happen to it, but it endureth them not if they continue long.

*Of the Lungs.*

**T**He Heart being seen, cometh the Lungs, called in Latine *Flabellum*, and *Ventilabrum*, and in Greek \* *Pneumon*, for this is the Artificer of breathing, and the work-shop of Ayr; this is nourished by Ayr, as the body is with Meat; this filleth the hollownes of the Breast, round about the Heart with its five Coats or Lobes, whereof two are on the left side, and three more on the right; of them three one is less than the rest, cleaving to the Back,

\* *Flabellum*  
dicitur a  
flando.

Sic *Ventilabrum* a  
ventilando.

\* *Greece* e-  
tiam

πνεύμων  
α πνέο-

μοι suff-  
lor, suffla-  
tur enim ut  
foliis spiri-  
tum tra-  
hens & e-  
mituens.

Back, as it were, in the middle ; which hath little pipes, but almost no motion ; and this is the Mat or Pallet to the *Chilis* ascending ; and about that Lobe toward the top of it, there is also certain glandulous flesh, which also with the aforesaid Lobe, is a Pallet or Coverlet of the aforesaid Vein, and this flesh is of a notable bigness, and is called of Authours, *Morum*, and *Timum* ; and of the Vulgar it is called, *Animella*, and *Laticinium*, and it is in usual meats of a rank taste, especially that which is found in Calves, and in milk Kids.

The substance of the Lungs is mixed of thin, light, soft, and red flesh, inclining to whiteness, like to the coagulated froth of blood, and it consists of three vessels or pipes, entangled as in a net, through all the parts thereof, in the same manner, that the branches of the Vein *Chilis* are in the Liver ; and this composition may be like to a hony comb, and also to a Sponge ; therefore it is capable



ble of blood and Ayr, for the Lungs is as it were a certain store-houle of Ayr to the Heart, fit to serve to both motions, to wit, dilatation and constriction.

Certainly its flesh is rare, that there might be much blood, and Ayr continually in it. Two vessels in it, which contain it, do shew the multitude of the blood, which are bigger in the Lungs than in any other member like unto it, the Heart and Liver excepted, in which the vessels containing blood are greater, surely not for themselves, but because they give Spirit and blood to all the members.

This blood in the Lungs is much, because the abounding plenty of it is dissolved by reason of the continual motion, which a great quantity doth continually oppose; and it is subtile, that it might pass suddenly to all the parts of the Lungs to nourish it; and it is also subtile, that it might be light, lest by its heaviness it should hinder the motion of the Lungs.

Also



Also the long submerſion of a living creature in the water without choaking, ſheweth that there is alwaies a great quantity of Ayr in it, and the ſending forth of a long and continual voice and blaſt, hindring from the receiving of new Ayr, or when one abhorreth it by reaſon of ſtink, or other cauſes, yet this Ayr in the aforeſaid drownings and ſtinks, is kept in the mouth, and in the jaws, the Tonſils helping with their Pellicles.

The help of this Ayr continually drawn, is, that by that being firſt altered, the Heart might be cooled and contemperated in neceſſities; and alſo that the Heart might have vent, leſt it ſhould be choaked.

The utility of it alſo is, that not out of a little part thereof might be engendred Spirits neceſſary for the being and wel-being; and it is a help of the expulſion of the abounding hot and ſmoaky matter which is drawn; it is for the entering in of the Ayr that is leſſer hot;

hot; being altered first in the Lungs, and then in the members through which it passeth.

This smoaky air, as it were an adusted superfluity of spirit, is driven by the pulsant Vein into the branches of the *Trachea*, in the construction of the Heart; and afterwards goeth forth hence from a living Creature by the *Trachea*, and by the nostrils and mouth, the systolative motion of the Lungs helping it.

But the air going into the Heart hath the beginning of alteration in the Nostrils, in the mouth, in the jawes, in the *Trachea*, and in the branches of it dispersed in the Lungs; in like order which one feeding on meat and drink hath in the mouth, in the *Gula*, and in the Ventricle and Liver.

For the alteration of the Lungs in the air is compared to the alteration of the Liver in *Chilus*, for by the Liver is the Bloud made of *Chilus*, which receiveth a perfect concoction in the Heart, but the spirit is prepared by the Lungs, of

M air

air which is made truly vital in the Heart, this going to the upper parts in the *Rete mirabili*, or in the least branches of Arteries about the Brain, is again altered; from whence entring the Ventricles of the Brain, the Animal spirit is made perfectly true, which is a bright, light, and pure spirit.

Also the flesh of the Lungs is light, lest it should hinder the motion of it; it is also soft, that it might defend the vessels thereof from breaking; and it is reddish, clear, declining to whiteness, because of the dominion of the Air over it, with which it is nourished, and also because of the coldness thereof.

A thin Pannicle doth cover this substance of the Lungs, being bred of many Membranes proceeding from the Pipes thereof, and from the Pannicles of the Brest; by means whereof it is sensible.

The Pipes of the Lungs are three, one whereof (as also the rest) growing alwayes less, descendeth

scendeth to all the parts of it, even unto the Pannicle inclusively envolving it, from the *Faringa*, or *Epiglottis*, through the foremost part of the Neck united to the *Gula*; this is hard and alwayes open, and also bigger than the rest, and it is compounded of very many Cartilages, each whereof is united one near to the other by pannicular ligaments, and this is called *Trachea*, and *Aspera arteria*, and *Laringa*, and *Bronchium*: its Cartilages in the Lungs are entire, and also annilar, but in the Neck they are incompleat, and in the manner of a C. From their Magnitude and Figure it is judged in the Hawkings of them, whether there bee Ulcers in the extreame parts of the Lungs, or in the middle, or in the neck.

Between these Cartilages, and in all the *Trachea* within and without, there is a Pannicle of a mean substance, perfectly circular, fastned to the jawes and mouth, in which are Vills lengthning and shortning the *Trachea* in the



motions of the Lungs.

The helps of this Pannicle is also to defend those Cartilages from the going in of extraneal things; it is also a pacifier of the voyce in the going out.

This Pipe doth not carry bloud as others, but only Air; also by this alone the unnatural things contained in the brest are purged out, having entred into it in the time of the dilatation of the Lungs by the thin Pannicle involving it, therefore is there caused an expulsion of Sanies, and other unnatural things to the mouth, and without; the Heart not being troubled.

This Pipe also possesseth a middle situation among the rest; on the right side of it is the quiet Vein, but on the left side the Pulsant Vein, but the Pulsant Vein toward the former parts, without the Heart, doth immediately enter into the substance of the Lungs, lest by reason of the motion of it, because it is subtile, it should receive solution; but the Vein  
not



not pulsant, because it is double-coated, and strong, doth not immediately enter the Lungs, but first compassing about the *Trachea*, it also entreth the Lungs, reaching toward the hinder parts.

In this Bowel, onely the pulsant Vein hath not without cause changed substance with the not pulsant; for the Vein not pulsant, called Arterial, in other members is single, in the Lungs double-coated; first, lest it should be broken by the continual motion thereof; secondly, that it might also contain subtile blood, nourishing the flesh of the Lungs, and also the *Trachea*.

But the pulsant Vein, called the venal Artery, is of a single coat, nimble in motion, that it might obey dilatation and constriction in a short space; this bringeth Ayr to the Heart, and carrieth it out; in it also there is spiritual blood, nourishing the Lungs, (as some would have it) but it is rather giving it life; its branches are united or joyned together with the

M 3      bran-

branches of the *Trachea*, through which the Lungs giveth Ayr to the Heart, but the Heart not being unthankfull, giveth life and nutrition unto that.

The branches of this Vein are so narrow, that the blood cannot pierce through them to the *Trachea*, and therefore they are passable to the Ayr, but impassable to the blood; but if they be notably opened, the blood floweth from them to the *Trachea*; and perhaps (as some would have it) from the branches of the Vein not pulsant, blood also floweth into the *Trachea*, whereby is caused spitting of blood, without the solution of the Veins of the Breast; nevertheless the pulsant Vein is more apt to this.

Every one of the aforesaid vessels in their first entrance of the Lungs, is divided into five branches, always growing less throughout all the parts thereof, and multiplying their branches; two are in the left side, and three on the right, whereof one less than the rest

rest goeth to the little Lobe on the right side, cleaving more to the Back; which (as wee said before) is a Coverlet to the *Chilis* ascending.

The shape of the Lungs is like unto an Oxes hoof; in number some think that they are two members united into one, in such wise, that it appeareth one Lung, with five Lobes, divided into two like parts, that one being hurt, the other might remain firm; in the hinder part it is longer than before, following the situation of the Midriff; in number it is one; the quantity of it, the situation, and colligancy appear; its complexion is hot from the part of its contents and place; but by accident, because of the Flegms remaining in it, it is cold; its helps are to serve the Heart by preparation and carrying; it serveth also to the breathing, and to the voice, and in like manner to speech, and its little Lobe serveth to the *Chilis* ascending; it suffereth passions of all sorts.

*Column  
ex κολον  
membrum  
secundum  
eminentiam  
quia capitis  
basis aut  
fulcrum, a-  
in a colle  
quia ascen-  
dit ab hu-  
meris collis  
more.*

*Of the Anatomy of some parts  
of the Neck, and of the pulsant  
and quiet Veins, inclu-  
sively ascending from  
the Liver and the  
Heart, even unto  
the Head and  
Hands.*

**T**He aforesaid things being  
seen in the Section of parts,  
the *Trachea* should first occurre,  
and the *Epiglottis*, and also the *Gn-  
la*; nevertheless these for the pre-  
sent cannot well be seen, unless  
the Anatomy of the Neck, and  
some parts of the Face be set be-  
fore; which being seen, wee will  
speak of the parts aforesaid: the  
Lungs therefore being dispatch-  
ed, reserve some of the upper  
fleshy part of it, for the seeing of  
the Trunck of the *Trachea Arte-  
ria* (laying aside the rest) except  
the fifth Lobe of it, which cleaveth  
to the Back; keep also a certain  
glandule neer unto it, which is  
called *morum* and *timum*, that the  
situ-

situation of the *Chilis*, and the ascendent Artery upon these may be seen, to which these two members are a coverlet; you shall also keep the Heart and its *Capsula*, and the Pannicle *Mediastinus*, and the Stomach, and also the Midriff, for the enquiring of other things of them.

Those things being kept, for better orders sake, I come first unto the speech of the Neck, and I term the Neck to be an Organical member, noble, and very necessary to a man for the members contained in it, which witness *Aristotle*, 3 *de partibus*, Cap. 3. is made for the *Trachea*, serving to the Lungs, and for the *Gula*.

But *Galen* in his eighth book *de iuvamentis*, Cap. 1. saith, that it is principally for the Lungs, because creatures wanting a Neck, want Lungs, as Fishes: but he addeth, that the Neck is the way of those members which descend from above downward: & of them which ascend from below upward; those which de-



descend, are the Nerves, the *Gula*, some muscles, and the *Nuca*; but the ascending, are the pulsant Veins, and the quiet: and the *Nuca* is contained of the Spondiles, that it may bee safe from outward hurts; and that hollownes which is between the parts of the Veins and Arteries, is filled by glandules remaining there; and all those are kept of their Coverings and Ligaments, after that they are all covered with the Skin; and that which is compounded of all those, is the Neck, which is placed for the Cane of the Lungs, by which is made the voice and breathing; also the Neck in some creatures is instead of a Hand, because they take their meat from the earth by the help of the Neck, by reason of the length of their feet. But of this sort the Neck serves for the Cane of the Lungs, and by means of it the Nerves do reach to the Arms, and to the Hands, and to the *Diafragma*, and to other members, the *Nuca* being their guide; and therefore for the

Ori-

Original of the Nerves were the Spondiles placed between the Breast and the Head, of which the Neck is compounded. These things *Galen* speaketh, which nevertheless saith not whether the *Trachea* ascend or descend; and although hee may say, that the *Gula* doth descend, yet perhaps it doth ascend, neither can its descent bee proved more than its ascent; neither of the *Trachea*; because they have not a manifest beginning, as Veins and Arteries, and as Nerves.

Wee may therefore say for the present, that the Neck is taken for that part upon which the Head is sustained and turned, which serveth to the upper Belly, to the middle, and also to the lower, by means of Nerves descending from the Brain, and from the *Nuca*; the situation of which is before from the upper *Furculæ* of the Breast, and behinde from the upper Spondile of the Ribs, and on the sides from above the Shoulders, unto the bone of the Head  
cal-

called *Basillare*; and commonly the hinder part of it is called, *Cervix*, of which shall bee spoken somewhere else; but the former part is called *Collum*, and because this member is principally for the *Trachea*, it shall bee the nobler of these parts, for the nobility of which the Anatomy of the Neck is to bee placed with it; and because the *Trachea* is a part of the Lungs, which is of the more principal parts of the middle Belly, spoken of before; therefore the Anatomy of the Neck for the present, commeth with the Anatomy of the middle Belly.

This part named *Trachea*, is called of many, *Guttur*, and *Faringa*; although *Faringe* (according to some) are the Veins which do swell in great voices, and those Veins are called of *Celsus*, *Granges*, and *Fragitides*, and of some, *Sfragitides*; and those Veins with the *Arabians* are called, *Guidex*, and *Apoplectica*, and *Somni*, and of some *Pensiles*, and *Spermatici*, and *Juveniles*, and *Jugulares*, and

Or-

*Organica*, and of *Galen in libro de utili. part.* they are called *Fagotides*, because they are near unto the passage of the meat, and of some *Carotides*, or *Somni*; but *Celsus* calleth the Arteries onely that remain there, *Carotidas*, called so of *ναγός*, which is *Somnus*, sleep; because according to some, for the most part, there is an opilation made in the branches of those Arteries, causing sleep, and also the Apoplexy.

And of those Veins there is on both sides one immediately under the Skin, which is commonly called, *Guidex manifesta*; also on both sides under some notable muscles of the Neck, is one Vein, which is called *Guidex occulta*, and *Profunda*, the hidden and deep *Guidex*, which is fellow to the Artery *Carotida*.

With those profound Veins and Arteries, there is on both sides affotiated one Nerve of a notable greatness, which is called, *Descendens*, from which do arise on both sides the *Reversives*; of all which



which speech shall be made a little below.

Also the former part of the Neck, is called of some *Jugulum*, and of some *Gula*; although not well; because *Gula* is the passage of meats and drinks; and *Jugulum* is that part which is immediately above the upper *Furculæ* of the Breast; nevertheless some call the aforesaid *Furculæ*, *Jugulum*, and *Clavis*, and *Clidas*, and *Clidia*; the extremitie of these *Furculæ* toward the *Spaulæ*, is called *Epomis*; but the other part toward the middle of the Breast, is called, *Payasfagus*.

The aforesaid things being noted, the Anatomy of the muscles, moving the Neck and Head, should occur after the Skin: but wee cannot have the perfect demonstration of them, unless the Anatomy of those Nerves, Veins, and aforesaid Arteries should be destroyed; therefore wee will be silent of these, referring the Readers to *Galen*, and to *Avicen*, and

to



to other Authours; for these muscles are many in number, and diversly placed, and therefore they should be seen with diligence, for the finding out of which, you should attend to them onely, because they are Anatomized with difficulty; and for this *Galen*, 12 de util. part. Cap. 8. where hee speaketh of these muscles, said, it concerneth him to be diligently afore-exercised, who studies certainly to follow these things here spoken of; he saith also in the same place, that speech only is not sufficient in Anatomy, but there is required touching and seeing, and therefore let there be refuge to the aforesaid Authours, because wee should attend to the Neck and Head onely, in which are many muscles, as well about the Spondiles as elsewhere, which in a common Anatomy cannot be seen.

For the Head, by means of the Neck with its bones and muscles, hath many motions, whereof some, witness *Avicen*, prima par-

*partitione primi libri*, are proper to the Head, and some common to it, and to the five Spondiles of the Neck; by which there is a compound motion of the declination of the Head and Neck together; and those motions doe either bow forward or backward, or on the right, or on the left, and between them is a motion of conversion or turning about; and those muscles are many and great, because the Position of them is of many shapes; and also, because they move great, and almost continual motions; therefore *Galen* (in the place afore,) said, that they compass about the Head on every side, which they move unto any part that you would decline it; concerning the number of them, there is discord between *Avicen* and some of his Companions contrarying him.

Therefore the enquiry of them being partly left alone, incise the skin from the sides of the neck, laying bare the lateral and anterior muscles, above which immediately

mediately under the skin you shall note the Vein *Gnidez manifesta*, which you reserved unhurt; after that incise those great Muscles, descending obliquely from the ears even unto the upper *Furculaes*, towards the middle of the Breast; under which on both sides is one *Glandule*, to the form as it were of an Almond; which is filling the empty places there remaining between the Veins and Arteries, about the lower part of the *Epiglottis*; and therefore it is called *Aequatrix partium colli*, the equal divider of the parts of the Neck; which also it moistneth in necessities; you shall also observe under those glandules on both sides one notable Vein *Gnidez*; and in like manner one Artery fellow to it, which are called *Occulta*, and *Apopletica*, many names of which are spoken of above.

Neer unto the aforesaid Arteries and Veins you shall also note one Nerve, on both sides, compounded of many Fibers; these

Nerves

Nerves are called descending, and the reverſive Nerves doe ſpring from theſe, of which a fair enquiry ſhall be made below.

Keep thoſe Nerves, and the branches of the aforeſaid Artery, and either Vein, to wit, the hidden, and the manifeſt, untill that you have ſeen the Veins and Arteries aſcending from the Heart, and from the Liver, even unto that place, for the ſeeing of which the Work-man may return back again about the region of the gibbous part of the Liver, and there hee will note a great trunk of the Vein *Chilis* aſcending; which in its aſcenſion firſt perforateth the Midriff, and there ſendeth forth many little Veins on both ſides, whereof two doe feed the Midriff, but the reſt doe nourish the lower ribs, and the members near unto them. But a very great branch of it aſcending reacheth even unto the Heart, being every way looſe, without an Artery fellow to it, and by that branch the gibbous part of the Liver is vented, and perhaps yivified. This



This branch is divided into three parts, one whereof much less than the rest entreth about the roots of the Heart, and is dispersed through the substance thereof, and nourisheth it.

Another bigger than the rest is united to the right mansion of the Heart, and bringeth bloud very plentifully to it.

From that branch (according to some) that Vein called *Arterialis*, which nourisheth the Lungs, taketh its original: but of these Veins wee have spoken somewhat in the Section of the Heart.

The third Branch of the aforesaid, which is also notable, ascendeth also above from the region of the Heart, under which is a certain glandulous flesh called *Morum*, and *Timum*, and this, together with the fifth lobe of the Lungs which cleaveth to the back, is (as wee have said before) a Mattresse, or Bed to the aforesaid Branch, ascending even unto the highest *Furcula* of the Breast; where this Vein is parted

N 2 into



into two branches, reaching transverse towards the *Spatulae* on the right side, and on the left; in that same manner also doth the great Artery, called *Aorta Ascendens*, reach transversely toward the *Spatulae*; and that you may the better see those Veins and Arteries, lay aside the upper *Furcula*, yet warily, lest you loosen the members near unto them.

Those things being dispatched, you must see the aforesaid Veins and Arteries, noting first that every one of them is divided into two Branches, one whereof as well of the Vein as Artery ascendeth by the Neck on both sides towards the Head, from which doe arise all the Veins of the Neck called *Guidez*, which you shall keep to be better seen afterwards.

Another Branch also on both sides is divided into five parts, one of them nourisheth the upper Ribs, and one the place of the *Spatulae*, and one the deep muscles of the Neck, and one penetrateth in the upper Spondiles of  
the

the Neck, and from thence passeth to the Head, and the branches of the pulsant Vein do associate them.

Another branch greater than all the aforesaid five, reacheth to the *Axilla*, or Armpit, and this is divided into four parts, one of them is spread in the muscles placed above the Breast, which move the *Spatulae*, and one entteth in the loose flesh, and in certain Panicles of the *Axillae*, and one goeth from the upper part of the Breast about the Teats, descending toward the *Abdomen*; and this (according to some) nourisheth them, and in part carrieth the matter of milk to them; and this (as wee have said elsewhere) is coupled in the *Abdomen*, with a Vein ascending from the *Inguina*, and from the Matrix to the Teats; and of that branch *Galen* speaketh, in 14 *de utilit. part. cap. 8.* saying, That from the *Thorax* do reach Veins to the *Hypocondria*, and to the whole *Epigastrium*, and are coupled with Veins which are

carried from the lower parts to the Matrix, having Colligancy, that when the living creature is increased in the Matrix, they might bring in the nourishment for it; which being born, they puff up the Teats again; wherefore it hapneth, that the *Menstrues*, and to give suck, cannot well be together.

But another branch greater than the aforesaid, is divided on both sides into three branches; one reacheth to the muscles which are in the *Spatulae*, and one to the muscles of the *Axillae*, but another bigger than the aforesaid, reacheth by a neer part toward the *Adjutorium*, and this goeth unto the little hand; this branch is called *Asellaris*, and *Basillica*, which being flebotomized, helpeth in diseases of the Breast, by reason of its neer Colligancy unto the true Ribs, and to the whole Breast; this Vein is also called of the Vulgar, the Liver vein, because it is neerer to it than the *Cephalica*.

But

But of the first branches (which I spake that you should keep) from which are made the *Guidex*, there ascendeth on both sides one, and before they do much ascend, they are divided into two parts on both sides; one of them is called, *Guidex manifesta*, the manifest *Guidex*, because it is neer unto the Skin, easily apt to be seen, which in one living swelleth in a strong voice; but the other, because it is below some muscles, is called, *Guidex profunda & submersa*, the deep and overwhelmed *Guidex*.

And indeed the manifest *Guidex*, presently when it ascendeth above the *Furcula*, is divided into two parts on both sides, whereof one ascendeth, but the other is involved about the *Furcula*, from which do arise many branches, nourishing the parts neer unto them, and some of those branches do again ascend, and are united again with the aforesaid first branch of the manifest *Guidex*; but before they are united,



one notable branch reacheth to the *Spatula*; and by the outside, under the Skin of the Adjutory, is terminated even unto the little hand; and this is called, *Spatularis*, *Humeralis*, and *Cephalica*, because it helpeth the Head, by reason of the neer Colligancy that it hath with its *Guidex*, that nourisheth the Head; but of that Vein, *Cephalica*, and also of *Basilica* and of the Artery fellow to it, it shall be spoken more amply in the particular Anatomy of the great and little Hand.

And the aforesaid manifest *Guidex* on both sides notable, is immediately under the Skin above the muscles of the Neck, which with its branches doth nourish the upper and lower Mandible, and the Tongue, and the Head ascending on the outside, about the Ears.

And some would have that those branches of the manifest *Guidex*, which are about the Ears, should be called, *Vene Spermatice*, because they say, that the

Sperm



Sperm cometh by them from the Brain ; and they are moved from the sayings of *Hippocrates*, in his Book *de aere & aqua*, which saith, that whosoever have the Veins behinde the Ears cut, they are altogether deprived of all Generation; nevertheless there are some that think, that such Veins are from the branches of the profound *Guidex*, which nourish the muscles remaining between the first and second Spondile of the Neck; and some which say, that *Hippocrates* did understand by the Veins the very Arteries, because they are more fit for good Sperm than the Veins; nevertheless *Hippocrates* saith in the same place, that Sperm also cometh from the whole and *Avicen*, 20 *tertii cap.* 3. saith, that *Galen* knew not whether the incision of these Veins may cause barrenness to incur or no : nevertheless he said, but it seemeth to mee that it doth not matter that the Sperm should bee of the Brain onely, although the nourishing of it be of the Brain; nevertheless

theless it is gathered by the good Anatomy of the Spermatick vessels, that the incision of these Veins behinde the Ears maketh not barren, by reason of the Sperm descending by them; nevertheless those Veins being cut, may weaken the Brain so, that it may not duly send the Animal spirit for conception; and this the profound *Guidex* may rather do than the manifest, and the Arteries may rather do this than the Veins, because they are the carriers of the Spirit; but either is possible.

But the profound *Guidex*, on both sides neer to the *Meri* or *Gula*, ascendeth below the aforesaid muscles which you cut, and in its ascent sendeth forth branches, nourishing the *Gula*, and the muscles of the *Faringa*; they also nourish the muscles remaining between the first and second Spondile of the Neck, from which (according to some) the Spermatick Veins recited of *Hippocrates*, do arise, which are behinde the Ears, of which

which there is yet a controversy.

They also nourish the *Pericranium*, ascending by it from the bottom, even unto the top of the Head; and there by perforating the *Cranium*, they descend to the *Dura*, and *Pia Mater*, carrying nourishment to them.

Also from the aforesaid profound Vein, doth arise one branch on both sides, piercing the bone *Basillare*, in the direct of the commissure *Lambda*; and being born up of the *Dura Mater*, it ascendeth even unto the top of the Head; and from that in the same place do go forth many branches through the pores of the Skull, which also do nourish the *Pericranium*; nevertheless the greater part of the aforesaid branches ascending within the Skull with the *Dura Mater*, do pass into the *Pia Mater*, with which also do pass some branches of the aforesaid manifest *Guides*, piercing the Skull on the top of the Head from the outward to the inward part, and

and from hence they pass to the substance of the Brain, and nourish that.

Also some of the aforesaid Branches in the direct of the *Commissure Sagittalis*, and *Lambda*, doe enter into the *Dura mater*, being doubled in that place; and this place is as it were a presse of which the blood is pressed out from the aforesaid Veins, into a certain large place being near there, towards the outside, which is called *Platea Fovea*, *Palmentum*, and *Lacuna*; about which *Platea* are certain Veins sucking the blood pressed out into it, which out of the same doe nourish the center of the Brain; and all those Veins within the skull, together with the Arteries, are those of which it is rightly called *Secundina*; and otherwise it is called *Pia Mater*. But the aforesaid Arteries called *Carotides*, being in the Neck, near to the Veins *Guidex*, and the descendent Nerves, ascending on the sides of the Neck on both sides, doe reach with some Branches dispersing here

here and there before, and also behind, and to the Tongue, and to the upper Mandibles, and the lower; and in the whole face, and in the hinder part of the Head, and some notable ones about the Ears, in the Temples, doe reach with their Branches to the top of the Head; and some also reaching to the muscles about the common juncture, are spread abroad to the Neck, and to the Head, where there is a great hole, from which the spinal Marrow goeth forth; it may bee from those branches *Hippocrates* said, that Sperm descendeth from the Brain, because the Ancients did call the Arteries also Veins; and therefore *Avicen* said, twenty *tertii*, that these Veins were continued to the Nuke, that they might not bee farre off from the Brain, in which there is light milkey bloud, which goeth first to the Reins, forthwith after that to the Veins reaching to the Testicles; and one notable Branch of these Arteries on both sides pierceth the bone, *Basilare*



*filare* toward the former part, and is united to the *Pia Mater*, giving life to the Brain, and carrying spirit to the Ventricles thereof.

From that Branch ascended on both sides immediately above this bone *Basilare* ( according to the Hinges of Physick ) is made the *Retemirabile*; which is ( according to them ) of a notable magnitude, which is before, behind, and on the sides.

And the aforesaid Veins nourishing the Brain in their ascent must bee sustained of some solid body, as is the *Pericranium*, and *Dura Mater*, because they cannot ascend by themselves for their single and soft coat, and the bloud in them is more apt to descend than to ascend, because it is heavie.

But the Arteries are not joyned to any solid body, but standing by themselves do ascend too within the Skull, because they are double coated and hard.

And it was not necessary that they should ascend, and afterwards turn their heads downward

as

as the Veins, because their blood is light, and more apt for ascending than descending.

Yet you shall better see the branches of those Veins, and also of some Arteries in the Anatomy of the Members following.

The substance of Veins and Arteries hath been spoken of in another place; their complexion is judged from the composition of them; their shape is known, they have Colligancy with the whole body; their bigness is also known; they are bigger in one body than in another; But the situation of many of them is often varied; in number they are unperceivable, because many of them are hidden; their helps are to feed all the members; they also suffer passions of all sorts, but there often hapneth to them a streightned opilation, caused from the fulness of blood, which if it bee made in the branches of the Veins *Guidex*, there always followeth profundity of sleep, the Apoplexie, and extreme suffocation.

That

That Vein *Guidex* is sometimes flebotomized, yet seldome in our Region and Age; its incision helpeth the Leprosie not confirmed, and in a strong squinancy, in a sharp *Astma*, in straightness of breathing, in hoarseness of voice caused by super-abounding of blood in an Apostume of the Lungs, for evacuation and diversion sake, for the antecedent cause, in the beginning and augmentation; nevertheless this incision of the Veins *Guidex* is to bee made by a learned hand, with a Flebm or Lancet, having some Obstacle near the point, lest all the sides of the Vein be opened, for these Veins are slippery in the touching of them, because they are not annexed to the flesh, as many others, as well also because of the soft and slippery glandules being under them; as also, lest the Flebm should prick a Nerve or other members placed there.

But the manner of flebotomizing these Veins, is thus; first, let the lower Belly of the Patient  
be

be bound, between the *Ilia* and *Hypochondria*, with a girdle decently binding ; let him also hold his mouth shut in expelling the air from the Breast; then let the Patient decline his head to the contrary side that is to bee let blood; because by doing so the Vein swelleth as a Chord extended, and with a fit instrument holding the Vein firm with the hand, or other device, the Vein must be peirced in the more eminent place.

Authors commend such a Section to bee made according to the breadth, nevertheless I would doe it obliquely, and let not the quantity of blood bee superfluous, neither let it bee done the second time; and let the Work-man have with him powders constringent for stopping of Blood, as *Bole-Armorick*, *Sanguis Draconis*, the hairs of a Hare, Mummy, the barks of Frankinsence, Aloes, and the like, and among all let him have Vitriol, or Colcotar, also Soot is praised, and burnt Beans, and Paper burnt, Skins, and

O

the



he like to these, the white of an Egge well beaten being always laid over, and with decent Ligation, and the Patient lying with his head lifted up for eight days, with light sleep, and decent diet, as farre as it shall seem good to the lawful Physician.

*Of the Anatomy of the descending  
and the Reverse Nerves.*

*Nervus  
ex veūgov  
quod ex  
veūw  
nuto, &  
flecto:  
quia  
Nervi  
instru-  
menta  
volunta-  
rii mo-  
tus. Galz*

THE Anatomy of the Veins ascending from the Liver upward being dispatched, in which also many things have been spoken of the Arteries ascending, I return to the descendent Nerves, from which the Reverseives doe arise; and I say, that in the lateral parts of the Neck, a little under the Ears, between or under some Muscles, are notable Veins, and Arteries (as it was manifested before) to which on both sides there doth adhere one notable Nerve called Descendent; these Nerves the Ancients did call *Apoplecticor*: and not well, because they



they did not know the operations of them, witness *Galen* in his Book *De Voce & anhelitu* : And these Nerves doe arise principally from the sixth pair of the Nerves of the Brain, and they rise also from the third, and descend perpendicularly, because in such sort they must move the members.

These Nerves are compounded of many branches, whereof some by descending (witness *Galen*) are spread abroad to the Heart, and to its *Capsula*, to the *Mediaſtinnus*, and likewise to the Breast in the roots of the Ribs, and some notable enough to the mouth of the Stomach, and to the *Diafragma*, and some lesser to the Liver, to the Spleen, to the Kidnies, and to other sensible members of the lower Bellies, to which also doe goe certain Nerves obliquely descending from the Nuke, and from those Nerves descending some notable branches are again turned back upward, which are called *Reversivi*, and *Retro Reduñtes*, which are commonly called the

O 2 Nerves

Nerves of the Voyce; and they reach toward the *Epiglottis*, binding themselves with certain of its muscles, whose heads are placed at the lower parts of its body.

Some branches also of the aforelaid descendent Nerves (besides those Reversives) doe goe likewise by descending to some of the Muscles of the *Epiglottis*, the heads whereof are turned upward, and they are Reversives (as it pleaseth some) with their muscles they shut the cartilage *Cymbalaris*, and *Glottida*, but the muscles of the descending Nerves doe move other Cartilages, and also they open the *Cymbalaris*.

From the seventh pair also, and from the *Nuca*, doe come Nerves to the muscles of the *Epiglottis*, which doe move it obliquely, (witnesse *Galen*.)

Those Nerves are two; one right, the other left, nevertheless they are divided into very many Fibers, or branches, as it appears, because of the many members to which they goe.

Their

Their quantity and colour is apparent; their complexion and substance is such as of other Nerves, yet the Reversives are drier and harder, because they are to bear notable, and as it were continual motions, especially when they shut the *Epiglottis*, to which shutting there is required a stronger motion than to the opening of it, because there are more muscles opening than shutting it; also the motion of the Heart, of the Lungs, and of the Breast doth open it; and therefore that such Nerves should be strong, Nature hath set them at a distance off from the moist Brain, from which by how much the more they are distant, by so much the more drier are they; and they pass near unto the Heart about the Artery, where perhaps by reason of its heat they doe obtain driness and hardness, and they are turned back upward, that by drawing downward they might shut the *Epiglottis*, which when they are relaxed, many other muscles helping, the *Epiglottis* is opened.

Their situation is on the sides of the Neck descending to the aforesaid members, but the Nerves which are called *Reversivi*, in the left side begin to bee turned back to the upper parts, when they meet with the great Artery *Aorta* in the place a little above the Heart, where that Artery is first forked, and beginneth to bee turned back through the Breast to the lower members, about which great branch descending is made the motion of the attraction, and relaxation of those Nerves, and that bifurcation of the Artery is to those Nerves as a wheel upon which water is drawn from a Well with a cord; and this place as well on the left as on the right, about which these reverſive Nerves are moved, or to which they are joyned in their motion, is called of *Galen*, *Diablum*, and *Flexor*; it is also called of some *Girgilus*, and *Bachan*, and *Galen* in his eighth Book, *De juvamentis*, cap. 2. doth resemble that reverſion of the Nerves, to those that  
with



with Horses in a Camp are turned back to the way from which they first came, and saith, that it is as it were a turning back of a thing upon a small wheel; and in the seventh, *De Utilitate*, cap. 14. hee saith, that he first of all found out those Nerves placed in that manner, and their Muscles, having the heads of them downward.

He saith also, that that reversi-  
on of those Nerves sheweth, that the Nerves have their original from the Brain, and not from the Heart, as *Aristotle* did think, for if the Nerves should have their beginning from the Heart, those Reversives should come from it, and not from the Brain, as it appeareth to sence.

And to those Reversive Nerves of the right side Nature hath also made the *Girgilus* (or that wheel which shee made in the left side) of one sufficiently noted branch of the Artery ascending, being obliqued toward the right Arm-pit, about the upper *Furcula* of the Breast of the right side, which



Artery goeth to the right Arm, to which branch it hath joyned other Pellicles remaining there, that it might bee strong, because this branch is not so great as is that about which the reversive Nerves of the aforesaid left side are turned back.

And under that branch of the right side, fortified of the aforesaid Pellicles, doe the right reversive Nerves ascend by the Neck; and as well those of the right as of the left are by ascending, implanted to the muscles of the *Epiglottis* with many branches, as it appeareth to sense, by means of which they move the *Epiglottis*, or *Laringa* voluntarily, as a Rider, by means of his Bridle and Reigns, moveth the Horse when he list.

The helps of the aforesaid descending Nerves are to give sense, and some motion (according to some) to the members to which they goe in their descent, concerning which it was spoken before; and the helps of the Reversives

versives are for the giving of the  
 Voyce; and therefore they are cal-  
 led *Nervi vocis*, the Nerves of the  
 Voyce, as well the descending as  
 the Reversives doe suffer passions  
 of all sorts; and if their complexi-  
 on bee notably changed, as some-  
 times it hapneth in the uncover-  
 ing of them by reason of an Ul-  
 cer, especially of the descending,  
 and happily of the Reversives, the  
 Voyce is lost, and their other ope-  
 rations, if they bee not taken a-  
 way, they are at least diminished;  
 and if the Reversives only should  
 bee wholly cut on both sides, the  
 Voyce and the Speech is lost; but  
 if in one side only, the half of the  
 operations is hurt; but if the de-  
 scending bee cut, of which the  
 Reversives bee parts (according  
 to some) those Five Operations  
 will bee hurt, of which *Galen*  
 maketh mention, 4 *Interiorum*,  
*cap. 15.* to wit, *Exitus aeris à*  
*pectore cum anhelitu*, a going forth  
 of air from the Breast with pain-  
 ful breathing; and *Flamen sine*  
*istū seu strepitu*, a blatt without  
 stroke

stroak or noise; and *flamen cum strepitu*, a blast with noise; and *Vox*, the voice; and *Loquela*, the speech; yet some will have it, that by the incision of the descending Nerves, the voice alone, and that blast with the stroak is lost; but concerning those Nerves look upon our Commentaries.

These things being seen, leave the reverſive Nerves in their place in the Neck, that by them you may the better ſee the muſcles of the *Epiglottis*, to which they are faſtned; leave alſo the upper part of the Ventricle, and all the *Gula* or *Meri*, and that upper part of the Lungs, which you kept for the ſeeing of the *Trachea*; leave alſo ſuch a part of the Veins and Arteries, reaching to the Arms and to the Head, that you may ſee the Anatomy of them in their place; but you may caſt away the Heart and the other members of the lower and middle Belly, which have firſt been ſeen, & kept for the ſeeing of the Veins, Arteries, and Nerves ſpoken of before; & before

we

we do further proceed in the present order of Anatomy, some things are to be spoken of the Face, and of some parts of it ; afterwards we shall come to the *Epiglottis*, and *Gula*.

*Of the Face.*

πρόσωπον  
*quasi*

πρός ὄθεν  
ὀπίσσω

*hoc est*  
*quod an-*

*trorsum*  
*videat.*

*Caf.*  
*Banhi.*

**T**He Face, called *Facies* of the *Romans*, and of the *Greeks* \* *πρόσωπον*, which is onely to man, is the former part of the Head known to all : this part should rather come to bee Anatomized with the upper Belly than with the middle, but for the present wee speak of it by the way, because in a common Anatomy the *Gula* or *Meri* cannot be shown, unless there be first mention made of some parts of the Face, and *Facies* is said, *quasi faciens hominem*, making the man; for by it is the knowledge and distinction of every person.

This part called *Facies*, is also called *Vultus a Volvendo*, of rowling, and so called a *Volendo*, of Willing,

Willing, because by it the affections of the minde are known, in which the colour of it is changed, either for bashfulness, or for some fault committed, or for fear, or sickness; nevertheless there are some whose countenance is seldom changed, and those are called *Vultrous*, brazen faced.

Also the countenance is changed from age to age, and the Face differs from the countenance in that, because the Face is alwaies the same, and the countenance is changed; albeit the Face may change its colour and quantity by age; and the knowledge of the Face is much considered of the *Physiognomist*; it is also considered of the Physician; as in the first Prognostick you shall first consider the Face of the sick man, for it helpeth in the knowing of many diseases, as the Leprosie, the *Periplemonia*, the yellow Jaundice, *cachexia*, and the time of *Menstrues* in a woman; in that they are also known that counterfeit sickness, but not alwaies.



Its situation is under the former hairy part of the Head; its substance is of more rare and soft Skin, than any other Skin of the body, of the vapours ascending to it from the whole; and for comeliness sake, under that Skin are many Muscles and Veins, pulsant and quiet, Nerves, Pannicles, Ligaments, Cartilages, and Bones; in number it is one Organical member.

The number of the parts of it, is the Forehead, the Temples, the Ears, the Eyebrows, the Nose, the Eyes, the Eyelids, the *Cilia*, or hair of the Brows, the Cheeks, *Maxilla*, or *Mandibule*, the Jaws, which are here *Synonymaes*, the Mouth, and the ball of the Cheeks, the Lips, *Gelafini*, the foreteeth, *Myſtax*, the *Mustache*, the trench or hollow place under the Nose, and the Chin, with its trench; its quantity, its figure, and Colligancy are apparent; its complexion is such as is the complexion of the parts of it; its helps are also to be gathered from

from its parts; it suffereth passions of all sorts.

*Frons a  
ferendo  
quod ani  
mi indi-  
cia præ  
seferat  
Ca. Ban-  
bi.*

*Of the Forehead, and the other parts  
of the Face, the Nose, the Eyes,  
the Eyelids, the Cilia, and the  
Mouth, with the parts thereof  
excepted.*

**F***Rons* the Forehead, is all that middle upper part of the Face without hairs, which is above the Eyes; nevertheless it is said of some, that the Eyes are in the Forehead; and therefore witness *Varro*, it is called, *Frons a foratu Oculorum*, from the boaring of the Eyes.

Under the Skin of the Forehead, is dilated one muscle, having its Fibers according to the length of the body, by which it moveth the Eyebrows; in the Forehead are also wrinckles, reaching according to the breadth of it, according to the situation of which, *Empericks* do cut their Abscessions (but ill) because then the Eyebrows do fall; therefore

the

the incisions in the Forehead ought to be made according to the length of the body.

In the Forehead are some Veins which are cut in diverse diseases, and Horse-leeches also are applied to them; under the aforesaid muscle is the *Os Frontis*, called *Coronale*.

*Of the Temples.*

*Tempora  
dicuntur  
quasi æ-  
tatis tem-  
pus &  
annos su-  
a canitie  
& maci-  
lentie  
prodant.*

ON the sides of the Forehead, are the Temples, called in Latine \* *Tempora*, which is times, because in them are known the years of many living creatures; for they first wax gray in man, but not alwaies; they are also made hollow in the long continuance of time; in the Temples are little bones, somewhat long, reaching overthwart the Head, which do keep the Temporal muscles within them, and the Skull; these bones are called of *Avicen*, *Ossa paria*; and beyond the aforesaid muscles in the Temples, there are also some Arteries, and notable Veins,

Veins, which in some diseases are incised.

*Supercilium qui supra cilium nascuntur crines; cilium vocatur vel a cileo quod sepius movetur vel a celo quod celum.*

*Of the Eyebrows.*

**S**upercilia the Eyebrows, are known to all, whose situation is in the ending of the Forehead; they are bred together with a man for ornament sake, intended of nature, that they might defend the Eyes from dust falling, and from rain, and the like; its hairs do not increase as those of the Head, for a good ends sake.

*Of Intercilium, or the space between the Brows.*

**I**N the bounds of the Forehead is a certain space between, dividing the Eyebrows in the middle of them, it also divideth the Forehead from the Nose; and to this part as to a center, are bounded the Nose, and the lower and middle part of the Forehead; this part is called *Glabella*, or *Glabra*; for *Glaber* is inter-

pre-



puted, *Sine pilis*, without Hair; this place is also called, *Leporina*, the comeliness of the Nose: in that place do often begin *Erisipilas*, called by another name, *Gutta Rosea*.

Of Malis, the Cheeks.

**M***ale* are those round parts in the Face, which are also called *Poma*, and they are below the Eyes on the sides of the Nose, and they are onely to mankind; and they are properly called *Gena*, although the greater part of the Face may be called *Gena*. The Skin of this part is thinner than any other part of the Face, which is easily made red, and changeth its colour in the affections of the mind, which commonly in well complexioned people is of a Roset colour; those *Male* do adorn the Face, and they are a defence to the Eyes, and to the Nose; and each of them hath one broad muscle, firmly united to its Skin, which are serviceable to them and

*Maia contract. ex maxilla cicerone, vel ex mali similitudine.*





led *Mentum*, because they that are lowest ought in all things ( if they are not ) to be mild.

*Mentum*  
*vult quasi*  
*à mihi di-*  
*duci.*

In the middle of the Chin is a certain hollownes, called of some *Buccula*, and *Buccella*, a little Cheek, it is also called *Typos*.

*Of Gelasinis.*

ON the sides of the mouth, on both sides in the skin ( in some persons, and especially in Boyes, and in Women ) is a certain little pit, which appeareth in laughter, which sheweth grace and comeliness, and theretore those pits are called *Umbelicus Veneris*, and *Gelasinus*, these are also called, *Umbelicus Veneris*, *Venus Navel*, because they are like to the hollownes found in the leaves of the Herb called *Venus Navel*, and *Coryledon*.

*Martiali*  
*Gela sinus a*  
*γελάω*  
*ridio maxi-*  
*me onim*  
*apparens*  
*risu.*

Of the hollow pit under  
the Nose.

**U**nder the Nose, in the middle of the upper Lip is a certain little valley, which *Laëtantius Firmianus* for the similitude of its hollownes, calleth *Lacuna*, a Ditch, it is called of some *Philtron*, and *Sperion*, and *Hyspia*; concerning the Nose, the Eyes, the Eyebrows, the Eye-lids, the Mouth, and its parts; it shall bee spoken in their place, beginning with the Anatomy of the mouth.

Of the Anatomy of the Mouth, and  
the parts thereof.

Φίλτρον  
Polluci &  
Ruffo quasi  
amatorum  
sive amabi-  
le dixeris  
vel amoris  
illecebra  
velut effect  
quoddam  
in amore  
illec-  
tamentum.

Os Sca-  
lig. ex  
ὄσσα  
vox.

**T**hat therefore the *Trachea*, *Epiglottis*, and *Gula* may be fitly shewed, as we have promised, I come to the Section of the Mouth, and the parts of it; and I say, that the Mouth is that hollow part in the face, being immediatly within the Lips, by which the meat and drink, and in part air

doe

doe first enter within the body, and by which Spittles and Voyces goe forth, and in which the Speech is formed, and it is called *Os*, as it were *Ostium*, the door to the aforesaid things, letting them in and out.

But the Cheek or Cheeks *Buccae*, are those parts in the face or mouth which may naturally be puffed up of the breath, that is, that hollownes of the mouth which is puffed up of the breath, being brought back from the Lungs, and retained in the mouth the lips being shut.

The parts of the Mouth are the Lips, the Teeth, the Gums, the Jaw-bones, the Palate, the Ulvea, the Tongue, the Tonsils, and the Fauces.

From the aforesaid things doth appear the substance, situation, and figure of the Mouth; its quantity is known to all; in number it is one member; the number of the parts of it is spoken of; its Colligancy is taken from its parts, and also its helps; its complexion is



such as are its parts; it suffereth passions of all sorts.

*Of the Lips.*

*Labrus a  
lavando,  
quidam, eo  
quod in co  
lavationem  
infantium  
solutum est  
fieri: haud  
improprie  
labium à  
labor dici  
puto quod  
ex iis verba  
elabuntur.*

**L***Abia*, which are also called *Labra*; the Lips in some are gross, in some thin; gross doe commonly argue rudeness of wit; the more prominent part of the Lip is named *Prochilum*; the continual joyning of them is called *Prostomion*, or *Prostomia*, and those which have their Lips hanging over, and likewise their Teeth, are called *Brochi*; in the middle of the Lips is a cleft which is properly called *Os*, the mouth.

The substance of the Lips is compounded of Musculous flesh, skin, and a Pannicle continued to the *Gula*; the union of these parts is so compacted, that one can very hardly bee separated from the other, and it is such, lest through the grossness of it, its nimble motion should bee hindred, which serves for every difference of placing, and therefore in them there

are



are four proper Muscles, and two common to them, and to the balls of the face. And the proper are little, according to the bigness of the Lips, which before they are united to the skin are chained together one to another, so that their parts are unseparable without the rending of them, one pair whereof hangeth obliquely under the apples of the face toward the Lips; also the other two hang obliquely from the lower Mandible toward the Lips.

And although there are only four muscles in the Lips, nevertheless there are eight motions, witness *Galen*, 11 *De Utili. cap. 16.* to wit, four Strait, and four Oblique, for every one of them while it is moved moveth Obliquely, because the situation of every one of them is oblique, but when two of them are equally moved, they move rightly, as it is in the opening of them, in which there is one right motion; but the other right motion in the Lips, is when they are shut, or pressed to-

gether to one another.

There are also two other right motions in the Lips, one is, when they are turned outward, and the other when they are folded inward; and those motions are made of strait Fibers, some whereof innermost are within those muscles of the Lips; and some are outward; and when the outermost are extended, then the Lips are turned outward; and when the innermost, then they are folded under or inward; and how the Oblique motions are made of one Muscle only, and the right of more, it is easie to judge, if you look into the shuttings of a Purse, which when they are drawn together rightly, and uniformly, they open the mouth of the Purse, and when only one of them is drawn, the mouth of the Purse is moved over-awhant.

Nevertheless *Avicen*, although hee speaketh of the aforesaid situation of the Muscles, setteth down but four Motions, as there are four Muscles; and saith, that

four

four Motions is sufficient for them; hee saith, that every part of them when it is moved, moveth to its own part, and when two, they are moved to two parts, and are dilated to two; they have therefore a perfection of their motion to four parts, neither have they any other motion besides them.

And as well *Galen* as *Avicen* doe speak of the proper motion, because the motion common to the Cheeks, and Lips, is made of two broad Muscles, which are in either Mandible; and the broad ones are bigger than the aforesaid, and those, witnesses *Galen*, are outward from the Cheeks unto the spine of the Neck, unto which doe pass Nerves from the Breast, and from the Clavicles, that is, from the upper *Furcuæ* of the Breast, which are implanted into the Cheeks, and into the lower Lip by right Fibers, and some other Fibers, reaching also from the Clavicles obliquely, and some other more oblique than the aforesaid, ascending from the *Scapulae* to the

the sides of the Lips are implanted in the Cheeks; and moreover, some other do reach from the place behind the ears (which sometimes they move) unto those Muscles; nevertheless those muscles are not manifestly known, although they have a multitude of Nerves almost from all the parts of the Neck; yet they are known if the Lips and the balls of the face be moved, when the Mandibles are shut to their uttermost power; not because the bony parts of the Cheeks may be moved, but their aforesaid fleshy musculous part is moved with the skin, which is properly for the only motion of the Lips; to which part, and also to the very Lips the aforesaid Broad Muscles doe goe, which move the Lips, and the Cheek-balls, and this is called the common motion that is of the Lips, and of the Cheek-balls.

Some also would have that the Cheek-balls in their upper part be somewhat moved of the Broad Muscle moving the fore-head, and  
some



some say, that those Broad Muscles moving the Cheeks and the Lips, doe also help the chawing.

And the motion of those muscles are best seen in those which are living, especially in them that are lean, and therefore I make mention of them, omitting the Anatomy of many muscles, because they may not bee seen in those that are living, neither bee shewn in a common Anatomy; I will also declare the Anatomy of the Tongue, and Mandibles for the same cause.

These Lips within themselves, and also the whole mouth are covered with a Pannicle, covering the *Gula*, or *Meri*, and the Stomach, and for this the lower Lip doth tremble when one is ready to Vomit: but this Pannicle is harder and thicker in the mouth than any where else, and grosser in the *Meri* than in the Ventricle, and always as it descends it is made more soft and subtile, because in the mouth it first meeteth with meats somewhat hard, which as they



they descend are alwayes made softer, witness *Galen 4. De utilit.* and according to that of *Avicen*, that one feeding, receiveth some digestion by chawing.

The Figure, situation, quantity, and number of the Lips doe appear; their complexion is set down hot; they have Colligancy with the Brain by Nerves, with the Liver by Veins, with the Heart by Arteries, and therefore sometimes in the compression of them the effects of the mind are known; the Lips also are stretched out, and restrained voluntarily; they have also Colligancy with the Ventricle, and *Meri*, and with the whole body by means of the Skin; their helps are many, they are first for the defence of the Teeth, and for the good form of the Face, for the expressing of the Speech, for the taking of meat and drink, and they are to the mouth as a door to a house, necessarily opening and shutting themselves; they also hinder the Air from entering cold to the Heart

Heart by it self, and by accident; they also retain the Air brought back from the Lungs in necessities.

They endure passions of all sorts, and among others they suffer *Ragadias*, Chaps, and oftentimes Cancers and trembling in *Crisises*, and in Feavers by participation from the Brain, and from the Ventricle.

*Of the Teeth.*

**T**He aforesaid things being seen, you may first open the mouth as much as you can, by cutting the Cheeks on each of the sides, that you may the better see the Teeth and the Gums; first noting the substance of the Teeth which is bony, and is harder than a bone ( witness *Celsus* ) nevertheless some say, that they are of the nature of flesh and bone, both because they feel, and because they are renewed again; they also doe encrease all the time of their endurance for their ends sake,

*Dens quasi edens, ab edendo.*

fake, because if they should not encrease they would not last, and the chawing would bee nought, from whence the life would bee short.

In number they are thirty two, to wit, in one rank, neer unto either Cheek there are placed sixteen, they are also oftentimes twenty eight only, because then the four hinder teeth are wanting, which of *Avicen* are called *Negnegids*. and these are two in either side, and sometimes they want six in all, and the *Negnegids* are the last in coming, which are called also the Teeth of understanding, of sense, and of wisdom, because in some they are bred in Man-hood, or in Old age; and witness *Aristotle* 2. *De Natura seu de Historiis animalium*; the Male have more Teeth than the Female, as it appeareth in the Sex of Women, of Sheep, of Sows, and of shee Goats.

The names of them are other of *Celsus*, other of *Galen*, other of *Aristotle*, other of *Avicen*, other of

of *Mundinus*; and first these are the names of *Avicen*, for in every part, whether in the upper, or in the lower, or in the middle of the mouth toward the fore-part, beginning in the middle, there are first two equals somewhat broad, called *Duales*; at the sides of which on both sides is one, which of *Mundinus* is called *Incisivi*, and of *Avicen* are called *Quadrupli*, yet *Galen* called the *Duales Incisivos*, which two *Duales*, and two *Incisivi*, *Celsus* calleth *Quaternos*, and *Aristotle* called all these *Aentos*, that they may cut, and it agreeth with *Galen*; on the sides of them, on both sides is one, which are commonly called *Cynodentes*, or *Canini*, Dog-teeth; and of some they have been called *Gelasini*, because they appear in laughter more than the rest,

Then all the rest (according to *Avicen*) are *Molares*, Grinders, called a *Molendo*, from grinding; which in some (according to him) are on both sides four, on the sides of the Dog-teeth, and in some



some they are five, and in that manner they are thirty two, or twenty eight, numbring them thus; two Duales, and two Quadruples, or Incisives, and two Dog-teeth, all which are six, and the Grinders ( according to *Avicen* ) are ten, or eight; if ten in either part, to wit, in the upper, or in the lower, they are in all sixteen, and as so, they are thirty two, but if they be eight, they are in either part fourteen, and so they are twenty eight.

Nevertheless *Mundinus* in the number thirty two, placeth two Duales above, and so many below, and two Incisives, and two Dog-teeth, and four Molares, and six Maxillaries, yet neither *Galen*, nor *Aristotle* doe appoint particular names of all the Teeth, but *Celsus* appointeth four Dog-teeth, on either side two, next to the *Quaterni* above, and as many below; *Celsus* also appointeth eight Maxillaries above, and eight below, to wit, four on both sides next to the Dog-teeth.

Their



Their shape is diverse, for some have only one sharp head, and one root, as all the Duales, and the Quadruples, or Incisives, and the Dog-teeth.

But the lower Molares have at the least two heads, and two roots, and sometimes three, and as many heads, and especially the farthest; but the uppermost have at the least three heads, and as many roots, and sometimes four, and especially the farthest, which are as it were a wall holding the others firm; and the roots of the upper Teeth are crooked, that they may bee the stronger, lest they should fall by their own weightiness; and the holes in which they are fastned are wondrously fitted to them.

And from the Jaw-bone doth arise for every Tooth one round additament, fastning the Tooth by means of the strong Ligaments; and those additaments Galen called *Prasopia*, which are not only in the place of the Gums, but in the extreame of their roots.

Q

And

And the Molares have more roots than the rest, because their operation is more continual than the rest, and because in chawing they are not moved upward and downward only, but they are moved laterally, or circularly.

All the Teeth have some sence, (witness *Galen* and *Avicen*.) their quantity and situation are apparent; they have Colligancy with the Mandibles and Gums, and with the Brain by the Nerve; their complexion is known, their helps are to prepare the meat for the Stomach; they also accent the Speech; they are also the weapons of Nature.

They suffer every kind of Disease which other Bones doe suffer, in them there is pain, commotion, corrosion, putrefaction, congel-ling, alteration of colour, and elongation from their Natural place.

Of

Of Gingivis, the Gums,

**A**fter the Teeth are to be seen the Gums, *Gingiva*, so called, a *Gignendis dentibus*, from the begetting of Teeth; and they are simple flesh, hard, in which the Teeth are infixed; in them there are so many holes as there are Teeth.

In number they are two, the one above, the other below; their shape appeareth, which followeth the shape of their Jaw-bone; their situation also appeareth, and their quantity, and their Colligancy; their helps are to make firm the Teeth, and to cloath the Bones of the Mandible about them, and with their heat to comfort them, and to them that want Teeth they doe afford the help of chawing; they have also a notable sence by their Colligancy with the Brain, by means of the Nerves dispersed through them; they endure passions of all sorts.

Of Palatum, the *Palate*.

*Palatum  
quod labiis  
dentibusque  
quasi palis  
munitum  
sit.*

**A**FTER the Gums, according to the true method of universal Anatomy, doth occur the *Palate*; which is a part of the mouth, witness *Aristotle, primo de Historiâ, cap. 11.* and is that part of the mouth either open or shut which is above the tongue.

This part is bony, ordained of the bones of the upper Mandibles, nevertheless it is covered with some flesh, with its pannicle covering it, in which there are some Nerves giving the sense of Tasting, and this part in the mouth is resembled to the hollowness of the roof of a Vault, or to the covering of a Furnace, and therefore it is called *Celum*, and *Aluum oris*, the highest part of the mouth; and it is called *Palatum*, quia in apertione oris palam ostenditur, because in the opening of the mouth it is shewed openly to us; or, quia manifeste latum videtur, because it seemeth manifestly broad; and the



the Palate, witness *Galen*, is as it were a bell lying before the *Laringa*, or *Epiglottis*, in which is made the sounding of the *Voyce*, in which by the means of the *Nerves* is the notable Sense of Tasting.

Its situation, its figure, its quantity, and number, and Colligancy appear; its complexion is cold, because it is bony by predomination; in that member there is not any hole serving the Collatory, as some doe think, by which the superfluities of the Brain should be purged out, but such a hole or holes are in the bone *Basilare*, above the Nostrils, as shall be spoken in another place.

The helps of it are, that the mouth being shut, and also open, the Air might be retained there to this purpose, that it might warm it if it be cold, lest being so it might hurt the Heart in its entrance; it also retaineth Air, by which the Heart is refreshed in necessities; it also helpeth in the retaining the Vocal air, and therefore the Palate is rugged for this,



that the air may goe forth full of surges; the Palate also by its hollownesse helpeth the revolution of meat in the mouth in the time of chawing; by means of its hollownesse also the Tongue is moved more nimbly for its operations; it also helpeth digestion with its pellicle, the pellicle of the whole mouth helping it, and it may be the Spittle mixed with meats in chawing.

It suffereth Palsions of all sorts, and among other Diseases it suffereth in Feavers the *Calam*, or *Alcolam*.

*Of the Uvula, or Uvea.*

*Ex Uva similitudine.*

**I**N the ending of the Palate about the Fauces, towards the head, right against the root of the Tongue is one member, fleshy, of a rare substance, covered with the membrane, whose quantity and shape is equalled to the grane of a Grape, and therefore it is called *Uva*, *Uvigena*, and *Uvigena*; it is also called *Columnella*, and also

*Column-*

*Columna*, and of some *Gargareon*, *Gargar*, and *Gurgulio*, it is also called *Fundibulum*; nevertheless this member encreaseth more than naturally in length and breadth, by humidity filling it, and sometimes it is like unto a Mouse tayl, as I have often seen; and sometimes it is indurated, and sometimes stranguleth, witnesse *Aristotle*.

Man only hath this member; its substance is spoken of, in which there are some Veins, and Arteries, and therefore if it receive solution it notably induceth bloud; its complexion is warm and moyst; its number, situation, and Colligancy appear; this member giveth way to things that are swallowed; neither hath it voluntary motion, therefore it is without muscles; it helpeth in the breaking and altering the air, and according to some in the tuning the Voyce; it also hindreth thirstinesse, by hindring air from entering the Fauces violently.

It suffereth Passions of all sorts,

Q. 4

and

and especially corrosion, and mol-  
lification, in which there is often  
required Cautery.

*Of the Tongue.*

*Lingua ex  
lingo, qua  
parie lin-  
gimus.*

**T**He Tongue is sometimes ta-  
ken for the variety of Lan-  
guages, as the *Greeks*, the *Arabi-  
ans*, the *Latines*, and of that kind;  
it also signifieth many other  
things, but for the present it is ta-  
ken for a member contained in the  
mouth, and it is called *Lingua à  
ligando*, of binding, because it is  
bound from one end to another  
within the lower Mandibles.

The substance of this member  
is naturally rare, fungous, and  
soft; it is also soft by accident, be-  
cause of the Humidities descen-  
ding from the Head, and from the  
Stomach to it; also the glandu-  
lous flesh in the root of it (in  
which there are fountains of Spi-  
tle) doth moysten it, by means  
of the Spittle; it hath also a mul-  
titude of Nerves, as well for the  
Sense of touching and taste, as for  
the

the motion; those that give the taste come from the third pair of the Nerves of the Brain, but those that give the motion come from the seventh, and these Nerves are notable, because the Tongue hath need of an excellent sense, and also motion; it also needeth very much heat and nourishment, therefore it (and in like manner the Yard) hath more and greater pulsant and quiet Veins than any other member like to it in bigness; and the Nerves that give it motion are distinct from them that give it sense, but those which give the sense of Feeling, doe also give Tasting, and the tasting is more easily corrupted than the feeling, because the tasting is a more subtile vertue than the feeling; and the situation of the Nerves of sense is superficial, but the situation of the Nerves of motion is nearer the Center more or lesse, according to the place of the muscles, which are commonly appointed nine, to wit, four pair and one single, with which it is moved



moved to every difference of position; and the Tongue in its root is large, gross, and strong, but in the former part it is subtile and sharp, that it might be more fit for motion.

Of the aforesaid muscles two are on the sides of the Tongue, of both sides one, which are called *Latitudinal*, proceeding from the sharp bones of the Head, placed behind the Ears, from which place also in part doe come the Fibers of one muscle, which is common for the motion of the Lips, and for the motions of the Apples of the Face, and these bones are called *Sagittalia*, and *Acularia*; there are also two called *Longitudinals*, beginning from the upper part of the bone *Lambda*, which are continued with the middle of the Tongue; and there are two other muscles which move the Tongue overthwart, proceeding from that side which is the lower of the two sides of the bone *Lambda*, and those doe penetrate between the aforesaid *Longitudinals*,



dinals, and Latitudinals.

There are also two others converting it, and turning it upward, and the Fibers of them are spread abroad in breadth under the aforesaid, and these are continued with the bone of the lower Mandible; neverthelesse *Avicen* 12. *animalium* saith, that those last are above the others; after that there is one muscle called single, which continueth the Tongue to the bone *Lambda*, and draweth the one to the other, and this muscle driveth the Tongue to the outward parts, by lengthening it, it also draweth back, and shortneth it.

Yet there are many that say, that the Tongue is not moved to the outward parts voluntarily, but meerly naturally from the imagination, as the Yard; and some say that it, and also the Yard are moved of muscles, and of the imagination together, and some of the imagination only, which by means of the spirit causeth a windiness, dilating, and erecting the Yard,

\* *Hyoïdes*  
*Latini cum*  
*Grecis ap-*  
*pellant, idq;*  
*voce con-*  
*trastiore, si-*  
*quidem*  
*ὕψιλος*  
*δὲς dicen-*  
*dum esset,*  
*quod*

*ὕψιλον*  
*litera for-*  
*mam ex pri-*  
*ma, voca-*  
*tur λ α β*  
*δ ο ε ι δ ἑς*  
*sed quia*  
*ubi confun-*  
*ctum est &*  
*finem facit,*  
*non in a-*  
*cuto angulo*  
*terminatur,*  
*rectius illud*  
*υ figura*  
*quam λ*  
*simile di-*  
*cemus.*  
*Columbus*  
*De offib.*  
*l. i.*

Yard, and in like manner the Tongue, with bringing it out of the mouth; but these things are handled of *Galen*, *Primo de motibus liquidis*, and of *Avicen*, *Prima primi*, in the Chapter of the muscles of the Tongue, and there the Expositors doe resolve the doubts, which see.

*Of the Bone of the Tongue.*

**T**He Tongue in the root of it hath a bone to which it is knit and fastned, and standeth firm, as upon his *Basis* in his many motions; and this bone is quadrilateral, or four-sided, not very hard, but it is as it were Cartilagineous, and it is called *Os \* Hyoidum*, and *Lambda*, or *Lambe*, because it is like to that Greek letter; two of the sides of it are towards the Tongue, which are in the form of the aforesaid Letter two forked, and two also so formed bigger than the first, are toward the Cartilage *Deltalis*, or Target Cartilage of the *Epiglottis*; which

which they embrace, and are fastened to it, lest it slide here and there, that this bone might the better make firm the other members fastned to it; and it is not only fastned to the *Epiglottis*, but also to the *Meri* by some Ligaments.

And this bone was not of a very long, or of a straight Figure, because the weightiness of the Tongue had drawn it to one side only, and then there had not been good speech, nor good chawing; and this bone is called *Hyoideum* of *Galen*, and *Os Lambda*, and of *Avicen* *Alfahic*.

The helps of this bone are of *Galen* set down many, although it bee a little bone; first, many muscles doe come from it to the Tongue, and some muscles also of the *Epiglottis*, and some doe goe from it to the *Spatula*, and some to the Breast, and some to the Mandibles; from that also, or from its Ligaments doe arise the Chords of the muscles neer unto it, and it is also a defence of the Target

get Cartilage of the *Laringa*, and this bone is the principal foundation upon which the Tongue is turned in its motions.

This Bone hath three conjugations of muscles proper unto it, to wit, one pair proceeding from the extremities of the lower Mandible, toward that part with which it is continued to the root of the Tongue, whereof the one is on the right, the other on the left, and that pair whilst it is contracted draweth it toward the Mandible.

The second pair ariseth under the Chin, and passeth to that bone under the Tongue, and is fastned to it toward the upper part, to wit, toward the *Epiglottis*, and that bone, this draweth to part of the Mandible.

The third pair ariseth from the Needle-like additaments of the bone of the Head, to wit, from the two sharp bony extremities, which are behind the Ears, and those muscles are continued with the end of that bone, which is toward



ward the Tongue, and they draw it to the upward parts backward.

All the other muscles continued to this bone are common to it, and to the members to which they goe.

Under the Tongue it self are two notable Veins, on either side one, which in many dispositions are let bloud ( especially in the Synanche or Squincy ) which are red, sometimes black, and sometimes green, and they are called of some *Rajina*.

Under the Tongue also where it is fastned to the mouth, are certain notable Caves divided into two parts, which are called the Orifices, or Mouthes, or fountains of Spitte, which of *Avicen* are called *Generativa saliva*, the engenderers of Spitte, in which a stile or pin of a Table-book doth easily enter; these Orifices are opened and shut like a Purse, as the Spitte encreaseth and diminisheth; these fountains are terminated to the atoresaid kernelly flesh placed in



in the root of the Tongue, from which a spirty moysture doth continually sweat out into the afore-said fountains.

Under the Tongue also is a certain pellicle, in the middle of it reaching long-wayes, which is called of our Vulgars *Il filello*, which in some is great, and the Widwives or Chirurgions doe cut that in the age of infancy, which if it be not cut maketh them hard of speech.

The complexion of the Tongue is hot and moyst; its shape, and situation, and Colligancy doth appear from what hath been said; its quantity is conspicuous, for witnesse *Aristotle*, one is broad, another narrow, another mean, but that is laudible which is measured in its Longitude and Latitude, according to the ability of speaking.

In number, although it may seem one member, yet there are two members, neverthelesse they appear one compounded of two likes; for commonly Nature hath

created the Senses double, that if hurt should happen to one part, the other part might remain unhurt; and it was not divided sensibly into two parts distant from one another for the chawing and speech, but it is united by means of one Pannicle covering it, nevertheless this Pannicle is divided in length into two sides, below and above, yet united and very firmly fastned to the Tongue, and this Pannicle is continual with the pannicle covering the Stomach, and *Meri*, and the whole mouth within side.

The helps of the Tongue are principally for the distinction of Voyce, and for the joyning of Letters, and therefore *Galen* in his Book, *De voce & anhelitu* said, there are three members appointed for the Voyce and Speech, to wit, the *Trachea*, the *Epiglottis*, and the *Tongue*, and every one hath glandules tempering it with moysture.

And the glandules of the *Trachea* are in the Neck moystning it,

R and

and making the parts of the Neck even.

And the glandules of the *Epiglottis* are those which are called *Arce aeris*, chests of air.

There is also a certain fat kernelly flesh about that, covering of the *Epiglottis*, which is called *Glottida*, which is a principal organ of the Voyce; but the Tongue hath glandules to which Veins doe passe, carrying Spitle to them, but the rest are without a Vein but are filled of their own accord with moysture flowing to and again unto them, and in the *Epiglottis* is engendred moysture, with which it is moystned: some moysture also floweth unto it from the Head.

The Tongue also helpeth for the discerning of taste, it also helpeth for the turning of meat in the mouth, so that every part of it may be bruised; it also helpeth swallowing; it suffereth passions of all sorts.

Of the Amigdals, or Almonds.

**I**N the upper part of the Tongue on the sides about the root of it, are certain kernally or glandulous fleshes, on either side one, called of many *Amigdale*, *Almonds*, which together with the aforesaid *Uvea*, and *Galsamach*, and also *Aisabic*, are placed of *Avicen* (9. *tersu*) among the parts added to the throat, and by the throat, the interpreter of *Avicen*, understandeth the space in which are the passages of the meat, and of breathing (but not well) because *Guttur*, the Throat, is taken of the Latines for the *Trachea arteria*, it is also taken for the former part of the Neck, which is from the Jaws to the *Jugulum*, and therefore *Celsus* said that the *Veins Granges*, that is, *Guides*, are in the right and left side about the *Guttur*, or Throat, and *Pliny* being witnesse, the throat is so much in a man, as oftentimes swelleth up in a Disease, and this tumour is called *Botium*,

Ex Amyg-  
dalarum  
similitudine



and also *Struma*, although *Struma* may also manifest *Scrophulars*, and some other tumours.

Therefore that space which is behind the *Uvea*, and the aforesaid *Almonds*, and *Galsamach*, and *Alfabic*, is called *Faux*; and *Faux*, or *Guttur* in the rule of *Avicen*, 9 *Tertii*, is not any member, but is that vacuity to which the top of the *Gula* or *Meri* is terminated, in the termination of which toward the fore-part is the *Uvea*, and the *Almonds*, and *Alfabic*, and *Galsamach*; but in its upper termination is that hollownes which is terminated by above the *Palate*, to the *Nose*, and to the bone *Basillare*, towards the *Anfractus*, or turnings, being under the *Colatory*, of which, speech shall be made hereafter.

And the aforesaid *Glandules*, of which wee intend for the present, are commonly called *Tonsiles*, and *Celsus* calleth those *Glandulaes*, and *Mundinus Fances* (although not well) and the Greeks call them *Antiadas*, and *Parhitmia*.

The



The substance of these Almonds is fleshy and sinowy, to wit, with Pellicles, with which it is fastned on the sides coming from the root of the Tongue toward the Palate, and by means of them the aforesaid *Amigdales* are united to the Palate, and those Nervous pellicles, together with the *Glandules*, are as it were little hollow ears, and therefore they are called *Arca* a Chest, or the Storehouse of Air, for those Chests are notable in the Beasts *Cynocephalis*, within which they keep not only air, but sometimes (as I have seen) meat, as are Chestnuts, Chiches, Filberds, Beans, or the like, yet those *Amigdales* with their pellicles may bee seen better in one than in another, but better in a living Creature, because in a dead Creature they are drawn back, and those Chests keep the air more in the going out than in the coming in, that all might not goe forth from the passage of the Heart, and the Creature perish, and that in drownings in waters,

and in stinkes it might be refreshed by the air retained.

And those Pellicles only (according to some) are those which *Avicen* calleth *Galsamac*, or *Golzama*, but in my judgement they are not but the aforementioned Chests, because *Avicen* saith, that above the *Galsamac* is the *Alfahic*, to wit the bone *Lambda*; and this bone is annexed to the Tongue, and to the *Epiglottis* before, under those Pellicles, and if those Pellicles are *Golzama*, or *Galsamac*, the writing of *Avicen* is corrupted, to wit, that which saith, And the *Alfahic* is above the *Galsamac*, neither is there any other member there toward the Palate unless the *Uvea*, and the pellicles of the *Glandules* (of which speech hath past) which make an arch for the retaining of air, and therefore *Galsamac* is not there, (but in my judgement) *Galsamac* is the *Epiglottida*, to wit, that pellicular covering which shutteth the *Epiglottis*, lest meats and other extraneal matters might enter into it, as wee shall speak anon.

From

From that which hath been said, the helps of the *Amigdales* do lye open; their Colligancy, also shape, quantity, and number doe appear; their situation is best seen when the tongue is deprest, and the mouth opened in the furthest part of it; their complexion is hot and moyst.

They suffer passions of all sorts, and now adaies they are Apostumated, indurated, and ulcerated in a certain Endimious disease, which of the Vulgar is called *Morbis Gallicus*; and they doe easily receive Rhumes from the Head, and in them is caused the false *Squinantia*, or *Synanche*, which is called *Branconcellus*, and therefore it is said,

*Ad fauces Branchus, ad nares*

*Coriza catarrus:*

*If the Catarre doth come unto the Fauces,*

*'Tis Branchus cald; Coriza to the Nose.*

It is also called *Dracenzellus*,

R 4

and

and perhaps corruptly, and at *Bononia Strangegioni*, because they are apt to strangle, they are also called *Gaioni*.

You shall see those *Amigdales*, and also the Tongue better, the Mandibles being excoriated in that manner, as shall bee spoken hereafter, because I will place the Anatomy of their Muscles, and of the members of the whole Face, and also of the whole cane of the Lungs, that they may bee seen as the Workman list, because they are seldome shewn in a common dissection.

*Of the lower Mandibles,  
or Jaws.*

*Mandibula  
ex manden-  
do, viz.  
offici.*

**T**He *Amigdales* being seen, it seems good to me to determine of the two lower Mandibles, that the rest of the Neck may bee more fitly and diligently Anatomized; of the upper it shall be spoken in their place, and the Mandibles are taken of me for the present for those bones of the Head



Head in which the Teeth are in-  
fixed.

And first it is to bee noted, the skin covering their Muscles, which in men is commonly full of hairs; after which are their proper muscles, serving to three motions, to wit, to the motion of opening the mouth, and to the motion of shutting it, and to the motion of chewing and grinding; the motion opening maketh the lower Mandibles to descend, and shutting elevateth them; and the grinding motion maketh them turn about, and decline to two parts; it is therefore necessary that the motion of shutting should be by muscles which descend from above, and draw to the upper parts; and the motion of opening is made on the contrary manner, and that of grinding with transversion.

The Muscles shutting are two, great ones, and having great Chords, which are called the muscles of the Temples, because they are fastned to the Temples between



tween the *Cranium*, and the *Offa*  
*Paris*, and in a man they are small-  
 lest they should burden the Head,  
 and also because a man chaweth  
 things not very hard, and those  
 muscles have great Chords, ter-  
 minated to the lower extremity of  
 the Mandibles, and they are very  
 soft because they are neer the  
 Brain, from which they have  
 three Nerves, two from the third  
 pair, and one from the fourth,  
 and by consequence the solution  
 of them is very bad; and there-  
 fore *Galen*, 11 *De Utili*, cap. 3.  
 saith, If therefore as *Hippocrates*  
 said, those parts which are near,  
 and common, and prime, are most  
 of all maligned, but there is none  
 any nearer than the Temporal  
 muscles, neither doth any other  
 muscle communicate more with  
 the Brain by more Nerves; it is  
 good reason to hearken out the  
 beginning of their passions; and  
 for their nobility, Nature hath  
 placed them in the hollownes of  
 the Temples between the bones,  
 keeping them on every side; the  
 muscles

Muscles of the Eyes are also very  
ble, because they are near to the  
ain, but they have not so many  
erves as the other, and those  
o Temporal muscles are holpen  
two other muscles, which doe  
e unto the aforesaid Mandibles,  
the inner part of the Cheek,  
d the Chords of those Tempo-  
muscles doe not arise from the  
d of the muscle, but from the  
iddle of it, that they may bee  
onger.

But the muscles opening doe a-  
e from a place called in Arabick  
*lbilirički*, which are two bones  
lled *Acuia*, *Acularia*, and *Sagit-  
ntia*, added to the hinder part  
the Head, and those bones are  
hind the Ears, and these two  
muscles descending are united, and  
e made one muscle, afterwards  
ey are separated, and of them is  
ade a Chord that they may bee  
ong; after that they are again  
ranchied, and are filled with flesh,  
nd the muscle is made; after that  
meeteth with the reflection of the  
landibles, and when it is contrac-  
ted

ted it draweth the Mandib  
backward; and because the Man  
dibles are heaue, descending  
themselves, two muscles only do  
suffice them.

But the chawing muscles are  
two, on either side one, which are  
triangular, and very sinowy under  
the balls, and they are such that  
the contracting they might have  
diuerse motions, so that by them  
the grinding and chawing might  
be compleat, and those muscles  
with one of their *Basis* are about  
the *Ossa Paris*, and with one other  
toward the balls of the Face, and  
with another toward the Mandi  
bles; yet every angle of the afore  
said muscles is most firmly mixed  
with a part of the Face in the di  
rect of them, that they might  
move the Mandibles diuersly, and  
some would have it (witness *Ga  
lon*) that every one of those mus  
cles should be three muscles, and  
that gibbosity which is in the ball  
of the Face, is of those muscles  
part.

The Tongue also, besides  
those

ose muscles helpeth the chawing  
turning about the meat.

And the muscles lifting up the  
mandibles are great, because they  
ve a great motion, and they  
e soft, because they are next to  
e Brain.

And the muscles depressing are  
small, because it is more easie to  
press the Mandible than to ele-  
vate it, and to hold it being ele-  
vated.

But the chawing muscles are  
mean, because the circumduction,  
turning about of the Mandibles  
more easie than the elevation,  
and more hard than the depres-  
sion.

Some will wonder that Nature  
made the Teeth of chawing grea-  
ter, and more than they of inci-  
sing; it is to be said, that Nature  
hath prepared not only teeth to  
cut the meat, but she hath ordai-  
ned Reason and Art, which shee  
teeth for the cutting of meats;  
shee hath also made the chawers  
eater, and more, because the  
chawing action is stronger, and

more



more permanent; which chaw-  
ing Art doeth not for the most  
part ( unless by accident in sick  
people ) as shee doth the cutting  
of meats.

The muscles being seen, that  
you may the better see the *O*  
*Lambda*, and the head of the  
*Meri*, and the *Epiglottis*, you shall  
cut the skin transversly from ei-  
ther corner of that Fissure which is  
called the Mouth, and the afore-  
said muscles toward the Ears, in  
which Section consider ( if you  
can ) the aforesaid muscles, and  
also the other parts of the Face,  
excepting the Nose, the Eye-lids,  
the Eyes, and the Ears, fleaing  
the skin with diligence from them,  
which being seen you shall lay  
bare the bones of the lower Man-  
dibles from their upper juncture  
unto the middle of the chin, in  
which they are firmly united by  
one juncture; the aforesaid bones  
are also united on both sides to the  
Head, by one loose juncture a-  
bout the ears; you shall also note  
their Situation, Number, Figure,

Colli-

Colligancy, and quantity; their substance, complexion, and helps ye open, they endure passions of all sorts.

*Of the Anatomy of the Throat,  
and of the Gula.*

**T**HE Mandibles being seen, remove them with diligence with a crooked Knife, Saw, or other Instrument, wholly from their place, that you may the better see the Throat, and the Gula, yet keep the Tongue unhurt, and the bone *Lambda*, that you may see the Colligancy of these members; the Mandibles being removed, observe the situation of the Throat, and of the Gula, and of the bone *Lambda*, which is placed near unto the root of the tongue, and the top of the throat; howbeit you may not stirre these members, unless you shall first see the muscles of them; but before you may see them you must give way to the Anatomy of the Throat, and of the Gula, for those members

*Guttur a  
gutta, quia  
voce sunt  
quasi gutta  
fluens  
sermonis.*

members are so fastned to one another by Pannicles, and Ligaments, that one cannot be shewed without the other.

The Throat depending under the Jawes even unto the Lungs, possesseth the formost situation; first, that by its hardness it might be a defence to the *Gula*; Secondly, because by that situation it is more direct to the Lungs, and so doth serve it better, and more easily; Thirdly, it is formost, because the *Gula* is longer than it, which if it should bee before the throat, it should either bee obliques from the end of the Throat unto the Stomack, and the swallowing had been ill; or because there should also have been some inconvenient hollownes from the end of the Throat unto the Stomack, toward the back.

And the Throat is a body very long, round, hollow as a Cane, whose substance is compounded of many annular Cartilages, yet they are imperfect circles, like those Bracelets called *Armilla*, and they are

are like the letter *C*. and therefore they are called *Cartilaginee C formes*, *C* like Cartilages, and *Semicirculares*, but they are bigger than a half circle, and in the part not Circular they doe meet with the *Gula*, by means of a soft pannicle and somewhat hard, being perfectly Sphærical, covering and fastning them within and without, and beyond the pannicle, on the inside covering the throat from the top to the bottom; there are other Ligaments filling the throat toward the *Gula*, where the Cartilages are uncompleat, nevertheless those Cartilages without the pannicle are properly the instrument of voyce.

The upper part of the throat is commonly called *Epiglottis*, *Larynga*, and *Nodus Gutturis*, and sometimes *Gurgulio*, and it is called *Caput Bronchii & Gutturis*, but the rest of it is often called an Artery, and a Spiritual Organ, or Pipe, and the Vocal Artery, and the sharp Artery, and the cane of the Lungs, and it is called *Farin-*



*ga à findendis vocibus*, of cleaving of Voyces, or of *Fando*, of speaking, and *Gargar*, and *Gargarean*, but *Laringa* for the most part by the interpreter of the Books of *Galen*, *De utilitate partium*, in the Latine tongue; *Laringa* is taken for the upper part of it, but the lower part is commonly called *Trachea*, and *Guttur*, called so, a *Garriendo* of chattering, because that chattering cometh from thence; and *Avicen*, *Prima primi capitis, de musculis gutturis*, understandeth by *Guttur* this member, but *Nona. tertii*, by *Guttur* he understandeth that space which is behind the *Palate*, in which is the passage of meat, and of breath, which of the Latines is called *Faux* or *Fauces*.

This member is also called *Bronchium*, or *Bronshum*, for the likeness of a certain Fish, and also of an Earth-worm called *Bronchium*, whose body is long, Cartilagineous, or scaly and annular, as is a *Viper*.

The lowermost part of this member

member is divided into two parts, one on the right, another on the left, which entereth into the upper part of the Lungs, and from hence it is divided into infinite Fibers unto it all, growing alwayes lesse through the whole substance of the Lungs, through the center of it to the extreames, carrying and re-carrying spirit to the Heart, in that manner which it appeared in the demonstration of the Lungs.

This member is not of one Cartilage only, but of many, convex without, and hollow within, united one near another, at a certain distance by Ligaments, and Pannicles; that by meanes of the Fibers of the Pannicles which are longitudinal, and the Nerves of their Muscles, it might bee extended and drawn back in its motions; and it is moderately hard and light, that it might bee shrill; and it is deprived of sence, that it might resist outward things hurting it; and it is round, because it is lesse apt to bee hurt; and their

Cartilages toward the *Gula* are incompleat, that by their hardnesse they might resist things swallowed, therefore the chanel of the *Trachea* is filled behind of the aforesaid Pannicles and Ligaments, which by their softnesse doe give way to things swallowed, and for this cause the hollownesse of the throat within it (its pannicles giving way) serveth the *Gula* in necessities, when great morsels are swallowed, and the pannicles of the throat doe easily obey in swallowings, because the time of breathing and of swallowing is diverse, and not only the throat in this serveth the *Gula*, but also the *Gula* the throat in breathing, because in the time of breathing the *Gula* is empty, as the throat is empty of breath in the time of swallowing, because the *Epiglottis* is always shut in swallowings.

Also the hinder part of the throat was not Cartilagineous, but pannicular, that it might bee the more easily moistned by drinking, or by licking with the tongue

tongue some moyſt thing, as it often hapneth in great heats and in Feavers, and that alſo matters contained in the Breſt might bee more eaſily brought out by hawkings, as it is in the Pluriſie.

And this member was wiſely mixt, Cartilagineous, and Pellicular, for two reaſons, to wit, for the ſound or voyce, and for breathing, and it doth therefore ſerve it, and the Voyce, and it is not ſhrill toward the *Gula*, becauſe there it is ſoft, and as it were fleſhy, and therefore if the *Trachea* and *Epiglottis* bee not decently dry, but moyſt, there is hoarſneſſe, witneſſ *Galen*, in his Book *De voce & anhelitu*, as it is before drink and liquid meat, that the Voyce is clear and ſhrill, but drink being taken by the *Gula* moyſtning the *Trachea* next, and united to it, a clear voyce is not uttered, and if it be ſuperfluouſly moyſtned with drink or rheum there is cauſed hoarſneſſ, and therefore old men by reaſon of the moyſture of theſe parts are hoarſe, and dry bodies



have a more clear and shrill voyce than moyst; and if the instruments of the passages of the Voyce be opened; then suddenly much air goeth out, and that is *Anbelitus*, the breathing; and if they bee constrained, with the breathing there is somewhat to bee heard differing, by the difference of the instrument constrained; and if the *Epiglottis* bee constrained a voyce is made; but if the cane only, there is made a certain sound which is between breathing, and voyce, and this is *Raucedo* hoarfnels, of these things speaketh *Galen*.

From that which hath been said, the substance of the throat doth appear, whose lower pannicle is solid and hard enough, that it might resist Catharres, and evil Hawkings, and the smoakie vapour breathed from the Heart, and that it may withstand the motions of the throat in the voyce; the situation, figure, and Colligancy, and number; and helps of the throat, and its quantity are

to be seen; its complexion is cold and dry; it suffereth passions of all sorts.

*Of the top of the Throat which is called Epiglottis.*

**T**He aforesaid things being seen, I come to the top of the Throat, the principal substance of this member is of many Cartilages joyned together artificially, and with great diligence, from which the Voyce, and conservation of life reboundeth; the Muscles, Ligaments, and Pannicles covering the whole *Trachea*, doe bind together these Cartilages within and without.

This member (witness *Galen*) is not of one only Cartilage, but of many, unlike in shape and quantity, that by the benefit of the number it might bee dilated and constrained for the breathing and voyce; and its Cartilages are at least four, whereof one is not a pure Cartilage, therefore Authors doe commonly appoint three Cartilages

tilages in the *Epiglottis*, which are pure; the first pure Cartilage is called *Peltalis*, or *Scutalis*, or *Scutiformis*, because it beareth the form of a Buckler, the convex part of it is forward, but the concave is turned to the center of the *Epiglottis*, that is, to the passage of air, and this is bigger than the rest, which of us seemeth notably eminent in the former part of the Neck under the skin.

After the *Scutalis*, toward the *Gula*, or *Meri*, is the second pure Cartilage, which wanteth a name, neither hath it a name of the Greeks, nor of the Latines, and therefore it is called *Cartilago innominata*, or the Cartilage without name; this second hath its lower part of a perfect circle, with which it is united with the upper circle of the *Trachea Arteria*, behind, before, and on the sides, and toward the fore-part it is firmly united with its circular part under the *Scutalis*, and the *Scutalis* hath two notable additions, with which it doth embrace the second, and those

those two united together doe compound the whole circular pore of air before, behind, and on the sides, being altogether cartilagineous and hard.

The third Cartilage being also pure, is commonly called *Cymbalaris*, and of *Galen* is called *Antyoida*, because it is fastned within the second Cartilage in the top of it, toward the pore of air, right against the bone *Hyoidea*; this third is so much less than the second, as the first is greater than the second, and this Cartilage (in my judgement) is not one only, but two, united so that they seem one only, and this in its opening taketh the course of the two shuttings of a little Book, one whereof is shut against the other, and they work in a contrary manner in the opening of them, and this Cartilage when it is shut in its upper part, and also in its lower, maketh the hole wider than in the middle of it, and then it hath such a hole, or holes, as the trumpet hath in its ends, but greater above than below;



low; therefore *Galen* said in his eighth Book, *De iuvamentis*, that for the voyce it behoved the *Epiglottis* to be first broad, afterward narrow, and after that again to be made broad; and when this is shut it meeteth with the *Scutalis*, and when the parts of it, or the sides are opened, they goe toward the Cartilage that hath not a name.

Above these three Cartilages is a fourth, which is a body membranous, cartilagineous, and fat, being like to the tongues of Pipes, and therefore *Galen* calleth it *Glottida*, it is also called *Sublinguim*, and this is the most principal Organ of Voyce; and the *Glottida* is not a member of pure Cartilage, because a hard thing is hardly doubled, neither of pure Membrane, because in shutting it would be doubled, but it is compounded of Membrane and Cartilage for its decent shutting; and in it there is also fat, lest it should be dried as well by the almost continual motion, as also by the breathing and respiration of the air dry-

drying it; this member hath the *Epiglottis* to shut in time of swallowing, and the *Cymbalaris* also shutteth it; this on the hinder part, but the *Glotida* before, so that ordinarily neither in Vomiting, nor in swallowings, any thing can enter into the cane of the Lungs.

And the *Epiglottis* is not of one only Cartilage, but of many, that it might bee dilated and constrained in the diversities of formations of the Voyces, and therefore Nature gave to those Cartilages, and also to the Throat muscles serving them, four whereof doe unite the first Cartilage to the second, and two of them are within, shutting the *Epiglottis*, and two without.

There are other four which joyn the second with the third, to wit, with the *Cymbalaris*, two whereof are behind, and those open, drawing the *Cymbalaris* to the hinder parts, and two on the sides, drawing that also to the sides.

There

There are two other muscles about the Cartilage *Scutalis*, within the *Epiglottis*, which shut the *Cymbalaris*.

There are also two other Muscles within the *Epiglottis*, about the root of the *Cymbalaris*, also shutting the *Epiglottis*; and those twelve are proper to the Cartilages of the *Epiglottis*, joyned to none of the adjacent parts, witness *Galen*, 7. *De utilitate*.

The *Glotida* also hath one pair of Muscles, by means of which it shutteth the top of the *Epiglottis*, and those are stronger than the rest, witness *Galen*, 8. *De juvenis*, and those resist the muscles of the Breast, and other muscles opening the *Epiglottis*, and perhaps (according to some) that those are the two last immediately described.

Beyond the aforesaid are also eight other Muscles, whereof two are proper to the cane of the Lungs, witness *Galen* in his Book *De voce & anhelitu*, and those are in the channel of the throat, and

and *Avicen* saith those are at the *Gula*.

There is another pair of Muscles serving the Throat, yet not principally, but serving also to the members by, and this pair continueth the third Cartilage with the *Gula*.

And there are two other, serving the Throat, at the ruine of which there is caused hoarseness, and in that manner there will be twenty muscles serving to the *Epiglottis* and the Throat.

And from hence is comprehended the error of some Moderns, which doe beleeve that in the *Fauces* there are two proper muscles serving to them, thinking that *Avicen*, in *Primo primi de musculis gutturis*, should by *Guttur* understand the *Fauces*, as he did in *Nona tertii*, but wee deny this; because that *Faux* is not any determinate member, as wee have spoke more largely in our Commentaries upon *Mundinus*, and therefore those that intend to judge rightly, doe not trust in names,



names, because the Interpreters of the *Greek*, and of the *Arabick* into *Latine* (being often ignorant) doe take one thing for another, and by that means almost all Sciences are spurious by the variety of Interpreters.

*Of the Gula.*

*Gula*  
*ex γού-*  
*μας*  
*Gusto.*

**A**fter the Throat is to be shewed the *Gula*, which holdeth the hinder part to the Throat before the *Spine*; this descendeth unto the Stomack from the *Fances* by the Neck and Breast, being contiguous to the Artery *Aorta*, and to the *Spina*, perforating the Midriff; this some *Latines* doe call *Gula*, the Servant or Steward of Meats; the *Arabians* *Meri*, the *Greeks* call it *οισοφάγος*, as it were *Ferens comesta*, carrying things that are eaten.

*ab οισο-*  
*φάγος*  
*Edo.*

This member being included descendeth directly unto the fourth Spondile of the Breast, afterward it is a little obliqued to the right side, giving place to the *Aorta* descen-

descending, lest the motions of the *Aorta* should hinder things swallowed, and when it is not much distant from the Midriff it is a little lifted up, lest it should compress the Vein *Cebilis*, and that it might be the better fastned for the sustaining of the aforesaid descending Nerves, after that about the tenth Spondile it doth again begin to bee obliqued to the left side, and so descendeth obliqued to the Ventricle.

The substance of this member is fleshy and pellicular, having in the inner Pannicle long Fibers serving for attraction, terminated at the skin of the mouth, and of the lips, and broad ones in the outer part serving for expulsion, helping the expulsion to the lower, and also to the upper part, by contracting themselves, and by that means the Long and the Broad Fibers doe help the swallowing, they also help Vomiting, and two Nerves doe cleave to the *Gula*, descending from the Brain, on either side one, from which the Reversives doe arise.

And

And the inner Pannicle of the *Gula* is thicker in the top of it than in the bottom, and thicker there than in the Stomack, and thicker in the Stomack than in the first Intestine, because there is not required a resistance equally strong in touching of the matter digested, as of the undigested; and this inward Pannicle is continued to the mouth, that the attraction of meats might bee continual, by which means the *Epiglottis* ascendeth naturally in swallowings, being drawn of the Fibers of the *Meri*, or *Gula*, by reason of the strong Colligancy of them together; and from hence it is comprehended, that the *Meri* is a part of the Stomack continued to it with gradation.

The *Epiglottis* also ascendeth, witness *Galen* in his Book, *De Voce & Anhelitu*, because in all the inward part of the throat is that Pannicle involving, being fastned even unto the extremity of the mouth and lips, in which also there are long Fibers, drawing the

Epi-

*Epiglottis* to the upper parts.

And there are some which say, that the *Epiglottis* doth also ascend voluntarily, because it ascendeth when we will, and by that means it will have its motion compounded of a voluntary motion, and a natural; but *Galen* thinketh otherwise in his Book *De motibus liquidis*, holding that the *Epiglottis* doth only ascend naturally, in whose ascension the muscles of the *Glotida* doe necessarily draw it to the lower parts; and it may be those Muscles are not moved voluntarily, because the *Epiglottis* in his ascent being drawn by the aforesaid Fibers, doth draw the *Glotida* with it as other Cartilages; in whose ascent the *Glotida* is necessarily deprest, because it is fastned to its proper Muscles, which are united with their lower part toward the *Trachea*, and with their upper to the *Glotida* it self, which doe not ascend with the *Glotida*, and therefore doe draw it downward, and by that means also (not alwayes

T volun-



voluntarily is the *Glottida* shut in swallowing, by the ascension of the *Epiglottis* in the aforelaid manner, whereby it cometh to pass, that things drank and swallowed pass not to the *Guttur*, unless in a time in which the swallowing doth hasten before the ascension of the *Epiglottis* be perfected, and then Nature expelleth the things entered into the Cane with a Cough if it can; for it is reported in the History, that there hapned choaking to *Fabius* the Prætor, and to *Anacreon* the Poet; to this, with the stone of a Raison, to the other with a Hair swallowed in Milk; yet the *Glottida* is shut voluntarily by its Muscles, when we will retain inspiration and respiration; and in that manner the aforelaid Muscles of the *Glottida* doe shut it, sometimes by themselves, and sometimes by accident.

Plin.  
lib.7.c.7

The shape of the *Gula* is very long, dilated in the upper part in the *Fauces* like a trumpet; and it is not like a Cane, for it is like a Gut, whose lower Orifice is continual

tinual to the Stomack, where it hath notable sence by reason of notable branches of Nerves from the Brain terminated at it; its quantity appeareth; in number it is one member; it is fastned to the mouth, and to the *Epiglottis* most firmly, so that one is hardly separated from the other, it is also fastned to the Throat throughout, to the Heart by Arteries, to the Liver by Veins, and to the Brain by the aforesaid Nerves; its complexion tendeth to hot, but not excelling, because it is very pannicular; its helps are to carry things swallowed to the Stomack, and to bring back many superfluous things from it, to without the mouth; it suffereth passions of all sorts.

He that desireth with diligence to have the demonstration of the Throat, and *Gula*, first let him see the situation of them, beginning from the lowest part, noting the *Gula*, and as he goes upward let him note the Colligancy of it with the Throat, separating them

T 1 with

with a *Falx*, or other device, near unto the *Epiglottis*, noting the aforesaid Muscles, to some of which hee shall see the Reversive Nerves to be fastned.

The Muscles being seen, let him separate the *Gula* in the top of it from the *Epiglottis*, and let him note its Cartilages, noting also the situation of the bone *Lambda*, which with its two greater additaments embraceth the Cartilage *Scutalis*, and with its lesser sustaineth the Tongue; after that the three aforesaid Cartilages of the *Epiglottis* may be seen, and the fourth Cartilage united with fatness, and pellicle, called *Glotida*, by means of which is made the shutting of the *Epiglottis*; afterwards let the Tongue be cut, noting its aforesaid parts; and these things suffice for the Anatomy of the middle Belly, in which I have been prolix, and not absurdly, because these things are delivered to learners.

Of the Anatomy of the  
upper Belly.

**T**He upper Belly is named *Caput* the Head, *Quia ibi sensus initium capiunt*, because the Senses take their beginning there, which the Greeks call κεφαλῇ, and the Head for the present is taken for all that which is sustained by the Neck, in which the Animal members are contained, that is, the Brain; of the former part of which there is demonstration made of some parts, for the better orders sake.

κεφαλῇ  
Grecis  
dict: ἀπὸ  
τῆς κεκο-  
φῶσαι  
cavitate,  
Bauhin.

This Belly in a man is notable for its contents, and it hath parts common and proper; of the common some is before, some behind, and some on the sides; some above, some beneath; the former part is called *Sinciput*, the hinder part *Occiput*, the lateral *Tempora*, the Temples, and the place of the Ears; and the upper part is called *Interciput*, *Vertex*, and *Cacumen*, but the lower is called *Basis capitis*,



the *Basis* of the Head, and of its members, whether the Head bee for the Brain, or for the Eyes, we have spoken in another place.

The parts proper, some are containing, and some contained; the containing are all the outward parts, to wit, first the Hairs, which nevertheless are not to be numbred in the parts of the Head, (unless improperly) because they are not members, but they are reckoned as a superfluity, sometimes profitable.

Secondly, is the Skin, which is gross, somewhat fleshy, that the Hairs might be well fastned in it, and that it might be a defence to the parts below it.

Under the skin is a little flesh, or none, except in the Fore-head, and in the Temples.

After the Skin and Flesh is a Pannicle compassing the whole bone of the Head, called in Greek *περιγυρνέον*, and in Arabick *Al-mocatim*, and of some *Zinzia mater*.

After the *Pericraneum* followeth

eth the bone of the Head, called of the Latines *Calva*, and *Testa*, and in Greek *Craneum*, or *κεφαλίον*, *κεφαλίον* because it is hard. *ut κεφα-*

The things contained are the *verion cor-* hard Pannicle, and the soft Pan- *neum* nicle; this is called *Pia mater*, and *Licophbro-* *Secundina*, but that is called *Dura ni autem* *mater*; and above the mouth, in *παρεχτό* the bottom of the Head, below *κεφαλει* the hard Pannicle, manifold use *ab impe-* doth place the *Rete mirabile*. *rando.*

Within the aforefaid Pannicles is the medullous substance of the Brain, with its Ventricles, *Glandules*, Worms, and Nerves risen from the Brain, yet the *Pia Mater*, and the *Dura*, are of some placed among the parts containing, but the Nose, and the *Miringa* of the Ears in like manner, and the Eyes also are placed among the parts of the Head contained, but not in the upper Belly, nevertheless they are contained in the Head, and so the whole Face is contained in it also.

Therefore the Hairs are first to be examined, which are engendred

dred by reason of the vaporous matter raised up from the whole to the Head, as it were overflowing by reason of the heat of the whole body, and from hence are made the hairs of the Head called *Capilli*, made for their end, because they are for comeliness, as it pleaseth some, and that it might defend the Head from many outward things.

The Skin of the Head appeareth of it self, this wanteth motion unless in the Fore-head, and the Temples, & it is therefore deprived of Muscles; it hath also little sense.

You shall ( by excoriating the whole skin from the Head ) see the Pannicle called *Pericranium*, every way made involving the Head, that the *Dura Mater* might be hung up in the *Cranium* by commissures, and by many other pores of the *Cranium*; this Pannicle is also there, lest the Skull should meet with the Skin, and the flesh of the Head without a *medium*, and that the *Cranium* by means of it might be sensible, and that

that there might inhere to this Pannicle Veins and Arteries, feeding the Head on the outside, and those which enter in by the Commissures and other Pores, and those which goe out.

After that Pannicle is the Bone called *Cranium*, which lay bare throughout, considering the form of it, which ought to bee round, that it might be of the greater capacity, and less apt to be hurt, and it is lightly compressed on the sides, making the Prow of a ship before, and the Poop behind, that its Ventricles might bee long, serving the better to the operations of the understanding, and every form erring from that is evil, and by how much the more it is differing from that, it is the worse; this bone is not one continual, nor hard and thick as are many other, but thin and spongius, not very gross, and compounded with some Commissures or Junc-tures.

Neverthelesse the joynts of it are not knobby, but with teeth like



like Sawes, and rough, because they are not moved, and the Skull is so that its junctures might bee stronger, and that if hurt should happen to one part, the other might remain unhurt, and also that the vertue of a Medicine to be applied to the Head, for an offence of the Brain, might the better work its effect; and that the vapours raised up from the whole, and from the Brain, might the more easily goe forth and bee resolved; and therefore the upper part of it is thinner than any other part, neither is it very hard there, because hurt doth not happen to the top, as to other parts (yet fiery *Mars* hurteth every place) and it is such lest it should burthen the body, but it is thicker in the fore-head, because it is soft there; nevertheless it hath two tables, within which there is a notable hollownes, lest it should burthen the body, and that between them there might be air implanted receiving the savours; and this part is softer than the rest, because that

that which it containeth is softer.

But the Bone behind is harder, because that which is contained behind is harder; also the Bone behind is harder, because the eyes cannot defend it with their sight, yet it is thicker and harder in the sides, that it might bee shrill, because there within the substance of it the Organ of Hearing ought to be placed.

Also part of this bone in the hinder part toward the Neck is thick, gross, compact, and hard, and also on the sides behind the Ears, because there are fastned strong Chords of the Neck, which have great and almost continual motions; and behind the Ear are certain sharp eminences called *Clavicles*, and *Aculares*, being very hard, to which many Muscles are fastned, moving the members of the mouth, and of the face, and of the neck, which if they had been soft should not resist the aforesaid motions.

And this Bone is also hard about

bout the Temples, because there are great Muscles moving the Mandibles, and therefore all those bones on the sides toward the hinder part are hard as a rock, and are called *Petrosa*.

Also the lower part of this *Cranium* called *Os Basilare* is hard, chiefly in the direct of the Palate, where the Optick Nerves are situated in the form of a Cross, through which (perforated in that place like a Sieve) the moyst watery superfluity of the Brain descendeth, and this place is commonly called *Collatorium*.

This Bone *Basilare* in the top of it is not smooth but unequal, which may best be seen in Church-yards, as also other parts of the Head, and likewise all the bones of the Body, to the seeing of which let not him have recourse, which is not a lawful Physician.

The number of the Bones of the whole Head, and the names of their Commissures I have very well spoken of in my Commentaries upon *Mundinum*, therefore I  
let

let pass the declaring of many things for brevities sake, especially because the Writers of them doe not agree.

Part of this Bone hapning first, is that in which are the places of the Eyes called *Frons* the Fore-head, which is terminated in the first Saw-like juncture meeting it, which is called *Coronalis*, because (as it pleaseth some) Kings are crowned in that place, or perhaps because this Commissure beareth as it were a Bow-like, or Circular and Coronal form, descending from the top of the Head, of both sides, unto the corners of the places of the eyes, which are toward the ears.

Right against this Bone is one other Bone terminated in the Saw-like juncture, placed in the hinder part of the Head, which is called *Commissura Lambda*, because it is like to that Greek Letter which is called *Lambda*; this Commissure hath also the form of a Bow.

Between these Junctures is another



ther Commissure also like a Saw, placed in the top of the Head reaching from before backward, and this is called *Sagittalis*, because it goeth strait from every of the aforesaid Bow-like junctures to the other, as an Arrow standeth to a Bow.

At the sides of this Bone above the two *Ossa paria* in the walls of the Temples, are two rough Junctures, on either side one, the lower bones of which doe ride over the upper bones.

The first three Junctures are called true penetrating within by a direct line, and those last penetrating obliquely are called false.

Between those lateral Commissures ascending toward the *Sagittalis*, there is also on both sides, one other rough Juncture which is seldom seen, unless in heads macerated a good while, or boyled to the uttermost, between which and the *Sagittalis* are two bones, on either side one, thinner than the other bones of the Head,

which

which Galen calleth *Ossa Bregmatis*, and *Avicen Prima primi* calleth it *Cranium*, that place where the Coronal juncture is joyned with the *Sagittalis*, is called of some *Bregma*, and *Zuendeck*, and *Fontanella capitis*, in which the bone groweth together in Children at the last; and there are applied Cauterics, and *Cerates*, and other local Medicines for Catarrs, and many other Diseases; in other parts of the Head also are many other Junctures, of which speech is not made, because Physicians have not so much regard of them as of the aforesaid.

From that which hath been said hath appeared the situation, substance, and shape of the Head; its quantity lyeth open, its helps and Colligancy are in part; and shall be spoken of; in number it is one; the number of the parts is spoken of, and also of the Commissures of the *Cranium*, whereof three are like Saws, penetrating directly inward, the rest are like Scales, penetrating obliquely.

Its

Its complexion is the complexion of the parts compounding it; it suffereth passions of all sorts, which if they be in the coverings, and in the Brain it self are judged ill, more or less, according to the place and quality of the Disease.

*Of the Dura Mater.*

*Meninx  
dicta, ex  
rotundi-  
tate, à  
μῆνιν ἰν-  
να.*

**T**He aforesaid parts being seen, (that the parts contained within the Skull may bee more fully seen) divide the Head from the Neck about the third Spondile; after that cut the Skull a little above the Ears (unto the inward circumference of it round about, so that you may not hurt the *Dura Mater*) keeping always the aforesaid situation.

This being done, lift up the whole upper bone cut from its lower part with some Elevatory fit and strong, because it is most firmly fastned to the *Dura Mater* on every side, as well in the Commissures as in many other pores of it.

The

The Skull being lifted up, you shall see the *Dura Mater*, called also *Miringa*, which is a pannicle somewhat thick, sinowy, and strong, yet it is porous, that the vapours may goe forth from the Brain; its figure is plain, extended into a circular form, comprehending within it the whole medullous substance of the Brain, with the *Pia Mater*.

The *Dura Mater* is doubled from the Prow to the Poop according to the length, and in the direct of the Commissure *Sagittalis*; within the substance of the Brain, for the quantity of two inches, dividing the right part from the left; it is also doubled behind according to the breadth, dividing the hinder part of the Brain from the former; this second Duplication is not fastned together as the other first, because the first is joyned together by some Ligaments, and by little Veins, so that in it there is a hollownes apt to hold any thing within it self, and within that hollownes from before to

V

be-



behind, are many Veins ascended from the aforesaid *Guidex*, which are there compressed of the aforesaid Duplication, and being compressed they doe press out blood unto many little Branches of them, which are continual with the branches of the *Pia Mater* nourishing the Brain.

Toward the hinder part, in that doubling is a certain hollownes called *Lacuna*, and *Platea*, and *Fovea*, and *Palmentum*, into which part of this blood is pressed, and there is almost alwaies some blood there; for which *Erophilus* called that trench the third Vein, because this hollownes is very long as a Vein; and elsewhere Chords, as in Veins and Arteries; and in that trench there is not found blood under the form of blood; and *Avicen* calleth that doubling *Torcular*. Its quantity, situation, Colligancy, and complexion doe appear; in number it is one Pannicle; it helps besides the aforesaid, are to cloath the Brain with the *Pia Mater*, according to its length, breadth,

breadth, and depth, only by compassing, and by peircing into it, as it appeareth before; it also helpeth by mediating between the hard Bone, and the *Pia Mater* which is very soft.

It also helpeth in supporting the Veins which nourish the Brain, and the members neer unto it; it suffereth passions of all sorts, its notable solution is evil.

*Of the Pia Mater.*

**U**Nder that is another thin Membrane woven throughout with very subtile Arteries and Veins, being immediately fastned to the Brain, called *Pia Mater*, and *Secundina*, because it nourisheth the Brain, as the *Secundina* doth the young one; and in my opinion in those little Branches of Arteries every where dispersed in the *Pia Mater*, the bloud or vital spirit is made subtile and prepared, that in the substance of the Brain, and in the Ventricles it may bee made animal, as wee have

*Pia vel  
lenis ma-  
ter qua  
media est  
inter du-  
ram ma-  
trem &  
cere-  
brum, ut  
dura in-  
ter eam  
& cra-  
neum.*

said in our Commentaries upon  
*Mundinus*.

This Membrane is sinowy and thin, and is fastned to the *Dura Mater* in the top of it, from the Prow to the Poop by many little Veins, and with some Veins about the sides of the Head, and it is fastned through the whole substance of the Brain which it nourisheth; and according to the truth, the two Worms placed within the Ventricles of the Brain, doe draw their beginning from those Veins and Arteries, of which the spirit is carried to within the Ventricles, and also blood nourishing the inward parts of the Brain; in the walls also of the Ventricles is some portion of the *Pia Mater* carrying blood and spirit, blood for the nourishing of the parts neer unto it, but spirit for the operations of the Soul, as the aforesaid Worms doe.

From that which hath been said, doe appear its substance, shape, number, Colligancy, and situation, and its quantity appeareth, which

which entreth notably, not only into the Brain without, but also within the Ventricles, and in many foldings or turnings, although some may say that the *Pia Mater* is not in the hinder Ventricle, by reason of the hardness of its substance, nevertheless this part is nourished, and therefore it hath Veins although but little ones; its native complexion is cold and dry; its helps appear; it suffereth passions of all sorts, which are worse than in the *Dura Mater*.

*Of the Marrow of the Brain.*

**A**fter the *Pia Mater* doth occur the substance of the Brain, called improperly *Medulla*, or *Medulla Marrow*, because it doth not nourish or moisten the bones neer unto it, as the Marrow of other bones, but the bones of the Head are nourished that they may converse that. *Medulla quia in medio ossis vel quod made- faciat*

Its substance is to be seen, softer before, and above, than behind and below; in quantity it exceed-



eth the quantity of the Brain of other living Creatures, as well by reason of the multitude of the animal spirits, as also that by its cold and moyst complexion it might contemperate them, which come very hot from the Heart.

Its situation appeareth, and also its shape, which is such above, and throughout, as is the form of the Skull, nevertheless it hath many manifest foldings at the first sight, and also many hidden, which are seen in the dissection of it; within which the *Pia Mater* annexed to it doth enter throughout; its Colligancy appeareth, and will appear by the knowledge of its Nerves.

In number it is one member, yet it hath two parts which are not altogether separated from one another, but notably united.

One part notably exceeding the other in greatness, is from before unto behind, filling the whole hollownes of the Skull before, and in the middle from the top to the bottom, and behind it filleth only the highest

highest part of the Skull, being also in the direct of the greatest part of the Bone *Lambda*, and this part is called the former Brain.

The other part farre less than the first, called of *Aristotle Cerebellum*, and more solid than the first, filleth up the hinder and lower part of the Head, and this hath its place in the hinder part of the Head, under the first part aforesaid; but in this hinder part of the Brain called *Cerebellum*, there is not any concavity, or ventricle (as many note) It is well covered every where of the *Dura* and *Pia Mater*, and the sense sheweth all these things; the first part aforesaid is notably divided of the *Dura* and *Pia Mater* into two parts, according to the length of the Head, that is, into the right and left part, that its substance and its Ventricles might be distinct and doubled.

First therefore, remove diligently with a Razor in the other of the sides of that Duplication, (side-ways according to the top

and bottom) the *Pia Mater*, together with a notable quantity of the Brain, going down for the space of three fingers more or less, according as you shall finde the Ventricles of it.

For in every side of that doubling you shall find one notable hollownes called a Ventricle, which is extended long-ways, somewhat obliqued, descending toward the hinder part of the sides.

One side being seen, see likewise the other, in which you shall see the very same as in the former; and these Ventricles are divided from the substance of the Brain, that if hurt should happen to one part, it might not happen to the other; and the operations of the one part of those Ventricles are like unto the other fellow to it.

In that Ventricle on both sides is one pellicular red substance called *Vermis* the Worm, compounded of Veins and Arteries, which reacheth from one end to the other of each Ventricle, which hath  
motion

motion ( according to some ) voluntarily opening and shutting the Ventricles.

Beneath those Worms at the sides of them is a certain eminent part of the Brain, which many doe liken to mens Buttocks in shape, which in the lengthning, and in like manner in the shutting of the Ventricles doe touch one another, but in the shortning and opening of them they are separated one from another.

In those aforesaid Ventricles, in the former part of them there is commonly placed Fantasie, Common Sense, and the Imagination.

The aforesaid things being seen, remove a notable part of the Marrow of the Brain, that the other hollowneses of the Brain may be more diligently seen, noting in the formost *Basis* of the two aforesaid hollowneses one hole, which is common to the aforesaid cavities, by which the spirit, and also some Humidities contained in them, doe by descending goe forth



forth to a certain hollownes reaching toward the Bone *Basilare*, about that place where there is a certain glandulous flesh under the crossing of the Optick Nerves.

This hollownes is called of *Mundinus*, *Lacuna*; of *Avicen*, *Caput Rose*, and of others *Embotum*, because it is broad above, narrow below, every where compassed of a thin pannicle unto the Bone *Basilare*, and by that *Embotum* to the aforesaid bone (pierced there with very smallpores as a Sieve) are the superfluous moystures of the Brain for the most part emptied, which afterwards in many turnings of the Bone *Basilare* placed above the bone of the Palate, are thickned of the air drawn by the Nostrils, and of the natural heat, and at length are sent forth by the Nostrils & Mouth, by means of the Jaws, in that form which is known to all, having by reason of divers causes a divers substance, colour, quantity, and figure; from that which hath been said, doth appear the

the helps of the Brain, which nevertheless are of one sort from *Aristotle*, and of another from *Galen* and his followers, which see; it suffereth passions of all sorts; its solution is deadly, not always but for the most part.

About that *Embatum* toward the hinder part, also under the aforesaid Ventricle, or Ventricles, there is a certain hollownes somewhat long, whose walls are like unto the aforesaid Buttocks, which shut and open that hollownes when there is need, either from the motion of the aforesaid worms which are immediately above them, or from another motion caused of the spirits.

And that hollownes Authors doe commonly put for the middle Ventricle, in which they say that the Cogitative vertue is. In the hinder part of this middle Ventricle is a little hole which reacheth to one other hollownes, which is descending toward the place where the beginning of the *Nuca* is; and this hollownes is not in the aforesaid

said *Cerebellum*, as many think, neither is it compassed every where of the medullous substance of the Brain, but it is placed between the hinder and former Brain, compassed notably toward the *Cerebellum* of the *Pia Mater* covering it.

And between that last hollownes, and the aforesaid middle Ventricle, is a certain glandulous flesh, called *Conarium*, because it is in the form of a Cone, or Pine apple; this *glandule* there doth sustain many Veins of the *Pia Mater*, ascending toward the Center of the Brain, that they may nourish it; and this *Glandule* doth strain the superfluous Humidities to the aforesaid middle Ventricle, from which they are purged forth to the aforesaid *Embotum*; and from thence as it appeareth above.

In that hollownes spoken of in the last place, which is behind the middle Ventricle, being called the hinder Ventricle, Authors doe commonly place the Memo-

orative

rative Vertue, but I think otherwise.

And I say first, that the Apprehensive, Cogitative, and Memorative Vertue are in the first of those Cavities placed for the former Ventricle, as well in the right as in the left, and the Apprehensive or Common Sense is in the former part of it, and the Cogitative in the middle, but in the hinder part of it is the Memorative.

And I say, that the aforesaid Ventricle, which Authors put for the middle Ventricle, is not for the Cogitative Vertue, but is a way for the purging out of many superfluities of the Brain, and for the carrying of spirits to the aforesaid third Ventricle, which spirits serve not to the Memorative Vertue, but to the Motive and Sensitive Vertue, which come from the aforesaid first Ventricle, and are serving to the Common Sense, and from hence it is comprehended that the *Nuca* hath virtually its beginning from the former



mer part of the Brain, and also that the *Nuca* doth substantially arise from the former part of the Brain, as well from the colour of it, as also from the continuation; (which is nevertheles continued also with the *Cerebellum* placed behind) yet it hath greater direction, and also Colligancy with the Brain, than with the aforelaid *Cerebellum*.

But we have spoken these things better, and more fully, in our Commentaries upon *Mundinus*.

*Of the Nerves proceeding from  
the Brain.*

**A**fter the aforelaid things are to be seen the Nerves proceeding from the Brain, which are commonly seven pair, of every pair there is on either side one like to its fellow; and a Nerve called in Greek *νεῦρον*, or *νεῦρον*, is a consimular member, white, viscous in substance, long and round in shape, fast and hard to separate, the Organ of Sense and motion, and the pure sensitives are

*νεῦρον ex  
νεῦρον,*

*Nuto, &  
flectomō-  
tus est  
flexionis  
instru-  
mentum.*

are softer, and colder than the  
 morives.

Therefore take away the Brain  
 lightly, beginning from the for-  
 mer part, and you shall finde in  
 the direct of the upper part of the  
 Nose two white long substances,  
 on either side one, cleaving to the  
*Pia Mater*, the heads of which are  
 somewhat gross, wherefore they  
 are called of many *Caruncula Ma-*  
*millares*, or fleshy Teats, and they  
 are the instruments of the Sense of  
 Smelling, which *Galen* calleth not  
 Nerves, because they are soft; in  
 the direct of them the pannicles of  
 the Brain, and the *Os frontis* are  
 perforated as a Sieve, as well for  
 the smells as for the purging out  
 superfluities of the Brain in ne-  
 cessities, because for the most part  
 they are purged forth by the Cola-  
 tory, which is in the direct of the  
 aforesaid *Embotum*; and there be-  
 fore in the Skull is a certain no-  
 table hollownes filled for the most  
 part with air, in which air the  
 sense of Smelling is first received  
 of those Caruncles.

After

After the aforesaid Caruncles you shall see two great Nerves, which serve the eyes for the sight, and these seem to be crossed, but there is yet contention about this under a Judge.

After those is one pair of Nerves, which is placed for the second pair, and these give motion to the Eyes.

After those is a third pair, which is a little while united to the fourth, from which it is afterward separated, and descending it is spread by the Face; and within and below the Bone *Basilare* it is united with the sixth pair to be spoken of now; and together they make the aforesaid Nerves, descending to the members of the middle and lower Belly, and from them doe arise the Reversives.

Afterward are the Nerves of the fourth pair, descending to the Palate for the sense of Tasting, and these are subtile; yet some take the third pair for the fourth; and contrariwise, as wee have said in our Commentaries, and there

there wee have declared the cause of that error.

After that there is the fifth pair, which is spread abroad on both sides, within the bone *Basflare*, in the direct of the Ears, and serveth to the sense of Hearing.

After that is the sixth pair, which is mingled with the third, as it is said before; after that is the seventh pair, which because it is Oblique, gives motion to the Tongue, and also to some Muscles serving the *Epiglottis*, it also giveth the sense of Tasting to the Tongue it self.

The substance of these Nerves is known to all, yet the hinder are harder than the former for the senses within; its figure, quantity, situation, number, and Colligancy appear; in complexion they are not very dry, and therefore they have not strong motions; and they are cold by nature; their helps also appear; they suffer passions of all sorts, all which are evil, because of their colligancy and operations.



Of the Rete Mirabile, according to  
the common opinion, and  
some what of the  
Nuca.

*Rete mi-  
rabile ex  
textura  
mirabili.*

**T**He aforesaid things being seen, lay aside the whole Brain, with that portion of the *Nuca* which is between the Spondiles, which you cut, and kept with the Head; first noting its situation, substance, number, and figure; its Colligancy with the Brain is spoken of above; its quantity and other things requisite unto it, shall bee better observed from that which is to be said; in the beginning whereof near to the Brain is a certain hollownes, continued to the hollownes commonly placed for the Ventricle of the Memorative Vertue, by which the spirits sent from the Brain, for sense and motion, doe pass to its Nerves; and the *Nuca* (as also the Brain) is covered of the *Dura* and *Pia Mater*, as the sense doth demonstrate.

Those

Those things being noted, above there is only the *Dura Mater*, because by removing the Brain the *Pia Mater* is also removed, by reason of the firm and continual Colligancy of them together.

Between the *Dura Mater*, and the bone *Basilare*, in the region of the crossing of the Optick Nerves, where the aforesaid *Celsary* is, there doe ascend by the Bone *Basilare* two notable Arteries, one on the right, the other on the left, as it appeared above in the Chapter of the *Aorta* ascending; from which (as Authors doe commonly say) above the Bone immediately under the *Dura Mater*, are made many very subtile branches wonderfully united together, one above another, to the likeness of a Net, taking up a great place before, behind, and on the sides; after this, of those many branches are again bred two arteries like to the first, from which the aforesaid little branches are made; and these two Vessels perfect and great doe afterward a-

scend again above the Skull, to branch out even unto the Ventricles of the Brain, carrying spirits to them made subtile in the *Retē mirabile*.

And about that Net, some say, that there are two *Glandules* supporting it, and they say, that the helps of that Net are, that a subtilization of the vital spirit might be caused there, that being divided unto less branches it might bee the better altered, and the Animal spirit might be made; and perhaps that its little branches might bee more easily stopt, and might cause sleep, by the vapours raised up from the meat, and made thick by the Brain, falling down.

Nevertheless that Net I never saw, and I think Nature doth not work that by many things which it can doe by few; but Nature can make subtile these spirits in the least branches of the Arteries, descending above the *Dura Mater* cleaving to the bone *Basilare*, and ascending by the *Pia Mater* even unto

unto the center of the Brain; therefore this Net is not given there between the *Dura Mater*, and the bone *Basilare*; many other reasons have I spoken upon this in my Commentaries upon *Mundinus*, to which for brevities sake I referre the Readers, and among other reasons, sensible experience is to me a guide.

Of the Nose.

**T**He aforesaid things being seen, the speech of the bone *Basilare* should concur; but because the Anatomy of it, especially of the number of its parts is placed diverse among Authors; and also because this Bone is better seen in Church-yards, than in a Common dissection, therefore I shorten my speech concerning them, and referre the desirers of this Art to our Commentaries, and to Church-yards.

Let us therefore speak somewhat of the Nose, which for the present is taken for that principal e-

*Nasus*  
α ρ α σ μ ο ς  
fluor :  
propier  
mucci  
fluorem;  
ut giv a  
ε ρ ο σ μ ο  
gra : sic  
Latin :  
nasus a  
no , per  
quem ex-  
crementa  
fluunt &  
quasi e-  
manant,  
quod e-  
tiam spi-  
ritus in-  
natet &  
enatet.



minent part, which being set with an equal ridge on the center of the Eye-brows, doth distinguish and fence either sight of the Eye; the lower lateral parts of this member Galen calleth *Alaria*, they are otherwise called *Alula*; its upper part is called *Lepor*, and *Summum Nas*, the lower part *Imum Nas*, the middle exterior part is called *Columna*, and the inner part of it dividing the right side from the left, is called *Septum correctum*, and *Intersinium Nas*, and some doe call the lower holes of the Nose *Nares*, but for the present the hollowneses placed above the Palate in the bone *Basilare*, are of us called *Nares*, in which the moyst superfluity of the Brain being strained through, is made thick; of which we have spoken somewhat above.

The substance of the Nose is of Skin, Muscles, Cartilages, and Bones, and of the Pannicle covering its bones; its skin is so united to its muscles that it cannot (but with difficulty) be separated; its  
former

former and lower part is Cartilagineous, but its upper part bony; its muscles are two small ones, but hard, one on the right hand, the other on the left, more toward the lower part, because both do arise from the balls of the Mandibles, and they move the wings of the Nose to what part a man will.

After the Muscles are three Cartilages, one in the middle, and two on the sides, which are softer than the middlemost, which is hard enough, that it might keep the Nose (which it divideth within by the middle) straight and strong.

The Bones of the Nose are two, triangular, touching the Forehead, perforated with small holes towards the corners of Tears, by which the Humidities in the Eyes may penetrate, and from the Eyes into the Nose, and from the Nose into the Mouth, and by reason of this the savour of Medicines put into the Eyes is tasted of the Tongue.

And the *Os frontis* in the direct of the Nose is perforated as a Sieve, that it might serve for smelling, and that by them holes the superfluous moystures might goe forth from the Brain, passing first by the holes which are in their Pannicles, about the places of the Mamillary Caruncles.

From that which hath been said, is seen the substance of the Nose; in number it is one member, but divided into two parts at the inside, that if one part should bee hurt, the other might be firm; its figure, quantity, situation, and colligancy appear; its complexion is appointed cold and dry; its helps are for comeliness, and for carrying and re-carrying air to the Lungs; they also carry the matter forth from themselves, sent through the *Colatory* to the aforesaid Caves, which Caves are for the present called *Nares*.

They suffer passions of all sorts, and their solution is easily consolidated; in the lower end of it are sometimes applied Horse-leaches

leaches for safety, and such like; its proper passion is the annoyance of the Olfactive Vertue, which may happen to it principally by reason of opilation caused in the holes that are in the Bone *Basilare*, in the direct of the aforesaid mamillary Caruncles.

Of the Eye-lids.

*Palpebre à palpando id est*

**P**alpebra of *Palpando*, of stirring, called also \* *Gene*, are the pellicles covering the Eyes, known to all; their substance is of Cartilage and Membrane, with a very little (and it may be as it pleaseth some) with no fleshy part, the Muscles excepted, and it is Cartilaginous, that the Hairs may be fastned in it, which stand strait, and hard, that they may the better defend the Eyes; these \* *Gene* are called *Cilia*, a *Celandis Oculis*, of covering the Eyes; it is also Cartilaginous, because it better resisteth outward things, and that it might stand upright when it is opened, because it it should be

pel- Aristot.



pellicular it should easily bee depressed, and it is covered with skin for defence and comeliness.

In the upper Eye-lids under their skin is a Pannicle proceeding from the *Pericranium*, which is turned inward, involving their Cartilage without and within, even unto the tunicle *Cornea*, the *conjunctiva* being between covering the muscles of the Eye, and in the lower in like manner there reacheth a Pannicle, risen from the Pannicle covering the balls of the Face, and by that means it seemeth that the tunicle *Conjunctiva* should arise also from the Pannicle covering the lower bones of the Face.

About that Cartilage which *Galen* calleth *Tarsum*, there is some fat moistning them for necessities sake, lest they should be dried up by reason of their almost continual motion; the upper alone are moved, but not the lower.

And on either side their motion is of three Muscles, witness *Avicen*, whereof one openeth, which

is

is in the middle, but the two others are in the corners, which shut, yet *Galen* 18. *De Utilitate*, cap. 8. seemeth to place but two Muscles, whereof one is said to bee in the corner toward the Ear, w<sup>ch</sup> he saith doth open if it bee moved alone, and the other in the corner of the Nose, which hee saith doth shut if it bee also moved alone; and if both be equally moved the eye-lid is not more shut than it is opened, and this half shutting is called of *Hippocrates*, *Crocha Palpebra*, a crooked eye-lid, which in Sicknesse doth inferre an ill sign; and also *Galen* saith in the same place, Cap. 10. that hee never knew the aforesaid muscle placed at the corner of the Nose, because hee saw great Cauteries to be applied there for Fistulaes, and nevertheless the motion hath yet remained in the Eye-lids, which had not remained if the muscle had been there.

And he doth affirm, 11 *De Utilitate*, cap. 14. That the muscular skin of the Fore-head, and of the balls of the Face, by their motion

tion is sufficient for the shutting and opening of the Eye-lids, and some doe adde with the help of the muscles; but *Aristotle*, 2. *De partibus Animalium*, cap. 13. saith, that the eye-lids move not voluntarily, but by instinct of nature; nevertheless it seemeth to me, that they have a proper motion, and a common, the common is of the Fore-head, and of the balls of the Face; but the proper is of their proper muscles, which have their Nerves annexed to the Eye-lids, and to the muscle moving the Fore-head, and to the Temporal muscles, and to those of the balls of the Face, but whether those Nerves should proceed from the *Nuca*, or from the Brain, it is not perceived by sense; yet *Avicen* saith, that in the upper eye-lid only there are Muscles, because they are nearer to their beginning, that is to the Brain; which are small, and some say that they are without Chords, about the situation of which some are disagreeing among themselves.

And

And the lower Eye-lids are not moved (witness *Avicen*) because the motion of the upper sufficeth for the perfect shutting and opening to one another; and the lower are less than the upper, and more joyned to the eyes, lest by reason of their greatnels, and the separation of them from the eyes, they should gather in themselves bloud-shot, and tears, and other outward things, witness *Galen* 10. *De Utilitate*.

In the substance of the Eye-lids, in either angle or *Canthus*, toward the Nose, are two small holes manifest to the sense, one in the upper eye-lid, another in the lower, by which the Tears goe forth, and in that Angle are spongeous fleshes which contain within them that humidity of Tears, that they might moysten the members near unto them, lest they should be dried; and those humidities doe come sometimes from the Nose, and also from the Brain, by the Veins of their pannicles.

The situation of the Eye-lids,  
the



the number, quantity, shape, and Colligancy appear; their substance is handled; their complexion is appointed cold and dry; their helps are to defend the Eyes from small and soft things, but the bones adjacent doe defend them from great and hard things; and they help in the causing of sleep; their Hairs also doe help the Eyes, lest when the eye-lids bee open, dust or other small things might hurt them, and by their blackness they doe strengthen the sight; and they are not very thick, lest they should shadow the sight; nor too thin, that they might hinder small things to enter into the eyes.

They suffer passions of all sorts, and among others they suffer the turning in of their Hairs, which is cured by Cauterizing every Hair turned in, in its root, with a golden Needle, afterwards they are cured, as other places cauterized.

Of the Anatomy of the Eyes.

**T**He Eye-lids being seen, the Eyes doe occur, called *Oculi* *ab occultando* of hiding, for they are hid between the Eye-lids; for the seeing of which, first cut the *Oculus frontis* in the direct of them, so that at length you may see the other of them, in the manner hereafter to be spoken, noting first its Nerve, which is called *Opticus*, which by perforating the tunicles of it reacheth towards its center; and between the *Conjunctiva*, and *Cornea*, there is a notable fatness and glandulous flesh taking up the humidities, as the glandulous flesh of the root of the Tongue doth, which it streameth out sometimes by the Nose, and by the holes which are in the eye-lids spoken of before, by means of which, as well by the fatness as by the humidities the Eyes are kept from drying up.

There are also its proper Muscles which are seven, whereof one moveth

*Oculi ab occultando Varro, quod ciliarum tegminibus, seu palpebris (ut Lactantius de opificio) occultantur.*

moveth upward, another downward, and one other toward the right hand, another toward the left, and two reaching overthwart doe move circularly, but the seventh is near the Optick Nerve, which it doth sustain and elevate, and defendeth it from relaxing, whilst the eyes are fixed in a continual beholding, and therefore this alone fastneth the Eye; some doe say, that that muscle is doubled, and some that it is trebled, and all these muscles have their Nerves from the second pair of the Nerves of the Brain.

The aforesaid things being seen, separate the muscles, the aforesaid fat, and likewise the glandulous flesh from its pellicles, which are really four, yet they are commonly appointed seven, which doe differ somewhat in substance, situation, colour, shape, and quantity, and in complexion; but in Colligancy they doe not differ; they doe also differ somewhat in their helps.

In those Pellicles which are called

led the Membranes, and Tunicles of the Eyes, there are three Humours, yet some doe adde a fourth which they call *Aethereus*, or the Airy Humour.

Therefore of those Tunicles beginning before, the *Conjunctiva* doth first occur; so called, because it joyneth the Eye to the Head; and this proceedeth from the *Pericranium*, and from the Pannicle of the Bones covering the lower bones of the Face about; but it proceedeth immediately from the innermost pellicle of the Eye-lids, risen from the aforelaid Pannicles; it doth also somewhat proceed from the *Pericranium* covering the orbs of the Eyes, and this alone is truly one Tunicle.

Nevertheless the *Conjunctiva* doth not cover the whole Eye before; but in the place where that faileth, before the Eye in the middle is the second Tunicle, which because it is clear as a horn, is named *Cornea*, this (according to some) hath four slender Tunicles, as it is found in its Ulcers.

Y

To



To this *Cornea* toward the hinder part is one Pannicle not bright, but obscure and hard, therefore it is called *Sclerotica*, which covereth the whole Eye behind, yet this is bigger than the *Cornea*, and those two are of some placed for one only for their Colligancy, because they both arise from, or are fastned to the *Dura Mater*.

After them beginning likewise before there is one Tunicle called *Uvea*, and *Coronoydea*, and *Foraminalis*, because it is perforated as a Crown, and as the grane of a Grape when it is removed from that it hangeth by, or the Cluster, and its hole is called *Pupilla*; its colour is various but often black, and party-coloured like the Rainbow, or of an Azure colour.

To this toward the hinder part is fastned one Tunicle, which is almost of like greatness as is the *Uvea*, and also of the same colour, and this is called *Secundina*; because that, and also the *Uvea* doe proceed from the *Pia Mater*, called *Secundina*; or as it pleaseth  
some

some, because this *Secundina* nourisheth the Eye, as the *Secundina* the young one.

Between the *Secundina* and the *Uvea* is the Humor called *Albugineus*, which in the direct of the *Pupilla*, cometh even unto the *Cornea*, and there this Humour is bright, more clear than in another place, and therefore some say that this Humour is called *Aetherens*, or the Airie Humour, and so doe appoint Four Humours; and because those two aforesaid Tunicles doe arise from the *Pia Mater*, some doe say that those two are one only.

After those Tunicles are two others, one before, another behind, which is bigger than that before; the former is called *Aranea*, the hinder *Retina*; *Aranea* is subtile, but compact, more bright than an Adamant Jewel; *Retina* also is subtile, but not bright as *Aranea*.

Between these are two Humours; toward the hinder part, and on the sides is the Vitreal

Y Hu-

Humour, which is like unto liquefied glasse, yet it is somewhat thick and viscous, in the former part of which is placed the Christalline Humour, as a Gem is placed in a Ring; the Vitreal Humour is faire greater than the Christalline, but the Christalline is harder than the Vitreal, and it is bright as a Gemme; also those aforesaid two Tunicles doe arise from the Optick Nerve (according to Authors) and therefore they are placed for one, which nevertheless, whether they be one or two, as likewise the rest, doth little concern the Physician; and the Optick Nerves are (according to some) notably perforated, nevertheless the sense denieth this in a dead Creature; we have spoken of other things concerning the Eyes in our Commentaries.

From that which hath been said, is seen the substance of the Eyes; they are situated in their Orbs, that is in two great holes placed in the Fore-head, and they are not  
very

very eminent without, lest they should be hurt of outward things; and for this cause they have the Eye-brows eminent without, and below the bones of the balls of the Face; their number, Colligancy, shape, and quantity appear.

Their complexion by reason of the Humours is set down cold, and moyst; and by reason of the Panicles is set down cold, and dry; and by reason of the multitude of the spirits is set down warm; their helps are known to all; they suffer Passions of all sorts: their proper Passion is the taking away, diminishing, and corruption of the sight.

If you cannot see all these things in one Eye, see them in both, at least see in one the muscles, and the glandulous flesh, with its fatness, and also the *Conjunctiva*; but in the other see the Tunicles, and Humours; yet a learned hand doth seek after harder things.



*Aures  
ab hau-  
riendis  
vocibus  
Lactan-  
tio &  
Virgilio;  
alii ab  
aura,  
quod so-  
nus per  
auram  
defertur;  
alii a Gra.  
αὐρῇ  
vox.*

**A**fter the Eyes doe occur the Ears, called *Aures ad hauriendis vocibus*, from drawing Voyces, or because they are *Audes vocum*, hearers of the Voyce; and as well the Cartilage of them as the holes are called *Aures*; their upper part is called *Pina*, or *Pirula*, and *Lobus*, but their lower *Fimbria*, and *Lobus*, where there are certain Veins flowing notably; if they receive solution, their inward part is called *Scaphus*.

Their substance is Cartilagineous, that it might bee safe from outward things, and shrill; they are without motion for the most part; some doe think that the Memorative Vertue is in the lower part of them, therefore those that would remember doe rub those parts; the truth is, that that last concavity of the first Ventricle of the Brain being doubled (in which I doe place the Memorative

tive

tive Vertue ) doth reach obliquely toward the Ears, and perhaps that by reason of this the rubbing of those parts doth help the memory.

These members are covered with Skin, yet they have some flesh very firmly united to their skin; there is not sense in them, unless a little; their shape is known to all; they are winding as Periwinkles, that the air making the sound might the better flow into them without violence.

Their perforation is in a bone more thick than any other part of the Skull, within which is a certain hollownes, which a certain thin and solid Pannicle doth cover, risen ( according to some ) from the Auditive Nerve, which is of the fifth pair of the Nerves of the Brain.

In the aforesaid hollownes, which the aforesaid Pannicle doth cover before, is implanted air, which receiveth the forms of hearing, which it giveth to the Auditive Nerve, dilated into the Pan-

nicle, which is called *Miringa An-*  
*ris*, and then the sense of hearing  
comprehendeth the Vocal wave,  
and every other sound coming  
to it.

And to this Pannicle within the  
aforesaid hollownes, are added  
two little bones apt to bee moved  
of the air there in the next moti-  
on, which in their motion doe  
strike one another, of which ac-  
cording to some, are caused all the  
forms of sound more and less, ac-  
cording to the air moved with-  
out.

There are some which would  
have the aforesaid Pannicle to rise  
from the *Pia Mater*, which pas-  
seth with the Auditive Nerve to  
the aforesaid hollownes; but con-  
cerning its beginning see our  
Commentaries.

For the well seeing of these  
things, there is required a learned  
hand, with Tenacles, a crooked  
Knife, a Saw, and a fit Mallet,  
because the aforesaid things, as  
well the Nerve which cometh  
from within, as the *Miringa*, which  
is

is toward the Orifice of the Ear, with the little bones, are seen with difficulty.

From the aforesaid things is seen the inward, and outward substance of the Ear; its situation, quantity, shape, number, and Col- ligancy appear; their complexi- on is cold and dry; their helps are known to all; they suffer passions of all sorts; their proper passi- on is the hurt of the Auditive Vertue.

*Of the upper Mandibles.*

**T**He Ears being seen, lest any part of the Head should re- main untouched, I come to the *Mandi-* upper Mandibles, which are pla- *bula a* ced after the aforesaid members, *manden-* for better orders sake; those Man- *do, cujus* dibles have only two proper bones *in actio-* under the Nose, and are divided *ne non* by one only commissure by the *parum* length of the Palate; in which *adju-* are the Teeth, which are in shape, *vant.* name, and number like to those which are in the lower Mandibles.

These



These upper Mandibles are ( according to some ) compounded of twelve and more bones, but improperly, because they doe adde them of the eyes, and *Ossa Paris*, and those of the balls of the Face, and other bones, to the two afore-said bones.

The substance, number, quantity, situation, shape, Colligancy, and complexion of these Mandibles appear; their helps are those which are of the lower, and which are of the Palate; they suffer passions of all sorts.

*Of the Involution above  
the Palate.*

*Palatum*

*quod labiis den-  
tibusque  
quasi pal-  
lis mn-  
nitum fit,  
vel Pa-  
latum  
quasi pa-  
lam la-  
tum.*

FROM the *Fauces* above the Pa-  
late, to the holes of the Nose,  
is an ample way, by which a man  
continually breathes to and fro;  
to this about the top are certain  
little Vaults, windings, or caves,  
placed under the *Colatory* below  
the *Embotum* of the Brain; the  
bony walls of which are subtil  
and pellicular: hence by the holes

of

of the Nose, and by the *Fauces*, the gross excrements of the Brain are stream'd forth to the mouth.

For the well seeing of those, the great hole of the bone *Basilare*, by which the *Nuca* descendeth, being first seen, and those *Spondiles* of the Neck being well shewen, which you took away with the head, divide the Bone *Basilare* with a Saw, or Falx, through the middle, even unto the *Palate* inclusively, and you shall see all the aforesaid things very well.

Of the Anatomy of the Extreams.

THE Head being dispatched, in \* *Russo* a common dissection, the hinder part of the Neck doth first occur, called \* *Tenon*, and \* *Cervix*, *Tendo*, sic whose situation is from the Bone *etiam Basilare* of the Head, even unto the *Lat. Tenseventh* *Spondile* inclusively, descending from the head downwards. *de do quia in capitis motu*

This part hath parts contained, *tenditur*, and containing; the Containing \* *Cervix* are the Skin, the Muscles, the *quasi Cepan-* *rebri via*.

Pannicles, and the Spondiles.

The Contained are the Membranes covering the Nuke, the *Nuca* it self, with its Nerves, Veins, and Arteries.

Of the Containing, some are without, some within; those which are without, some are above, some below, and some in the middle.

The upper outward parts are called of some *Fontanella Coki*, and it is the place where the first, and also the second Spondile are joyned to the Head; this place is called of *Avicen*, & *Primi*, *Alchadam*, in which are applied many Cauteries for divers dispositions of the Head, and there also are *Setons* placed.

Its lowest part is called of *Avicen*, *Alchael*, or *Alchel*, and the middle part between these is called *Nocra*.

From *Alchael*, even unto the *Alkadam* inclusively, there are between every Spondile actual Cauteries applied to Children, in preservation from the Epilepsie, and it is a singular remedy.

Among

Among the outward parts containing is also placed the Skin first occurring, which is to be excoriated, that the other outward parts containing may be seen, to wit, the Muscles, which in this Section are placed after, for the reason spoken of in the Anatomy of the former parts of the Neck, which nevertheless by the excoriating may be shewen after a certain confused manner, and casting them away, first noting the quantity, substance, situation, complexion, and shape of them; the number, Colligancy, and helps of them being omitted, which cannot be wholly comprehended, by reason of the dissection of the head placed before, and of the former parts of the neck; which things being seen, the bones of the Neck doe occur, placed among the former parts containing.

These Bones are called *Spondyli*, and they are seven, which are more subtile than the rest, because they must be light, lest they should burden the body, and they  
are



are such because *Nothos*, called corruptly *Nuca*, is grosser there, which by descending is alwaies made more subtile, because it sendeth part of its substance for every Spondile; yet the first Spondile united to the Head, is grosser in the hinder part than the other six, yet it hath a broader perforation, and the greatest part of the Spondiles unto the *Os Sacrum*, have wings and eminences, which this first is without, that the head might the better be bended to the hinder part, and lest it should tear the Nerves going forth from the *Nuca* neer unto them; in that Spondile also toward the upper part are two pits, in which doe enter two peeces of the Bone *Basilare*, neer unto that great perforation by which the *Nuca* goeth forth; it hath also two other pits almost alike toward the lower part, in which doe enter two peeces of the second Spondile, although there be some that say, that those peeces are in the first Spondile, and doe enter into

into the second ; the first Spondile is united to the Head by strong ligaments, upon which it is ben- ded side-waies.

After the first Spondile follow- eth the second, which differeth from all the rest in shape, for this Spondile hath in its top a certain additament , which *Hippocrates* calleth a Tooth, but of *Galen* it is called *Pyroydea*, because of its sharp form, and this additament en- treth into a certain pit which is in the first Spondile, distinct from the perforation by which the *Nuca* goeth forth ; and by reason of this the Head is safely moved forward and backward, and round about, or Obliquely, without the dislocation of the aforesaid Spon- diles, which would bee easie, if the aforesaid additament should not resist it ; because the juncture of the second Spondile with the first, is looser than any other found in the whole Spine ; also the other junctures of the Spine of the Neck are looser than those that are below them, and they have

have their bones *Simenia*, forked and small, lest they should burden the body.

After the Spondiles of the Neck doe follow twelve Spondiles, twelve Ribs, and those are called the Spondiles of the Back.

After those doe follow five Spondiles called *Lumbares*, and *Renales*, that is, belonging to the Loynes and Reins, and there are the Kidnies, and two Muscles called *Lumbi*; *Avicen* calleth that Region *Alchatim*; and these are bigger than the rest, and the place which is between the uppermost of them, and the lowermost Spondile of the Ribs, is called of *Galen* *Glatum*, and of *Homer* *Acruſta*, in that region is fastned the *Diafragma*.

After those Spondiles doe follow three others, which are not Spondiles unless improperly, and these are called of *Avicen*, *Spondili Albavini*, and of *Averroes* they are called *Ossa Agit*, and of *Galen* *Os sacrum*, and *Amplum*; but this

*Os sacrum*, according to *Galen*, consisteth of four bones, with which the *Ossa Anchorum* are continued, which are very firmly united with that bone on both sides; and by the command of Nature they are opened, or separated from one another in the birth; also those *Ossa Anchorum* are in such a time opened in the *Pecten*, wherein other times they are also naturally very firmly united.

After those bones first appointed, three by *Avisen*, are also three others, called *Ossa Albosos*, and *Cauda*, and so in all the true and false Spondiles are commonly in number thirty, of all which the substance is bony, with some cartilage placed between their junctures, and they are all firmly conjoyned by Ligaments, lest they should be easily dislocated by their motion. Their quantity, shape, situation, and Colligancy is to be seen; their complexion appeareth; their helps are to defend the *Nuca*, and its Nerves placed within them.

Z

They



They are also a foundation of the whole body; but the Spondiles of the Reins, and *Alhovius* doe principally this; they suffer passions of all sorts.

For the well shewing of these Spondiles Church-yards are requisite, our Commentaries upon *Mundinus* being somewhat helping; and that their inner substance may bee well seen, and in like manner their Marrow, commonly called *Nuca*, divide the Spondiles through the middle from the head to the tayl with a great Falx, preserving as well as you can the *Nuca*, and its Nerves unhurt; this dissection being made, you shall consider their Bones and Cartilage, and the Pannicle covering the inward part of them, and also the Ligaments with which these Vertebraes or Spondiles are united together; these being seen return to the *Nuca*.

Of the Nuca.

**T**He Spondiles being shewed, the parts contained within them, as well in the Neck as elsewhere, are to bee seen; the chief of whom is the *Nuca*, with its Nerves; the other parts are two hard Pannicles, and one soft, that which is harder than the rest cleaveth to the bones, the other is instead of the *Dura Mater*, being also hard; the other is soft, instead of the *Secundina*, or *Pia Mater*, all compassing about the *Nuca* it self, and the Nerves.

*Nuca*  
*vox A-*  
*frica*  
*forte a*  
*nuce dici*  
*possit*  
*Nuca e-*  
*nim spon-*  
*dilis in-*  
*cluditur*  
*ut nuce*  
*nucleus.*

The substance of the *Nuca* is viscous, moyst, with some solidity, and it is like to the substance of the Brain, but somewhat harder, and by how much the more it descendeth it waxeth the more hard; neither is it Marrow (as neither the Brain) as some doe think; its shap appeareth to all.

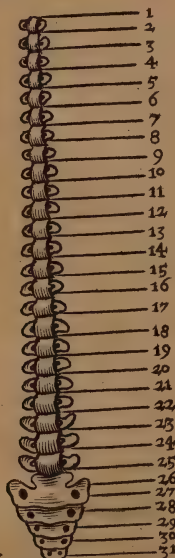
Its situation and place is from the lowest part of the Head, descending unto the second uppermost

most Spondile of the Reins inclusively, and it doth not pass that place; but from that place downwards. The whole substance of the *Nuca* is divided into many Nerves, which by descending even unto the last Spondile of the *Cauda* are divided through them; the number and quantity appear; it hath Colligancy with all members unto which its Nerves doe pass; it is also fastned to the Liver, and to the Heart by means of the *Aorta* and *Chilis*, by certain very little Veins and Arteries, reaching to it through the holes of the Spondiles; these Veins and Arteries doe perforate the aforelaid hard Pannicles compassing it about, and doe enter into the lost Pannicle risen from the *Pia Mater*, by means of which cleaving unto it, that they may be supported, they doe nourish and give life to the *Nuca*.

Its complexion is commonly appointed cold and dry, but some think otherwise.

Its helps are that Nerves might pass

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Place this  
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pass from it to the members, not in so great a distance as if they should come from the Brain, and that the Nerves might bee more distinct, not hindring one another, and that they might bee drier, and lest from their hurt the Brain should immediately bee hurt; and also if there should not be a *Nuca*, the Brain should bee bigger, and should too much burthen the lower members; it suffereth passions of all sorts.

*Of the Nerves risen from the Nuca.*

**W**Hat a Nerve is, wee have spoken somewhere else; *Nervi* not only the substance of them, *Gra:* but their shape and complexion; *νεῦρον*, from the head therefore descending to the end of the Spine of *πᾶρὰ τὸ νευρῶδες* the back are Nerves risen from the *ἀπὸ ὅλης τῆς σῶματος* *Nuca*, and these are thirty one pair, and one Nerve without a *quod per totum* fellow, numbring them thus; the first pair of Nerves goeth forth *corpus* from the first Spondile, one *diffunduntur.*

Nerve on the right, another on the left, as they are also alwaies in all the other Spondiles; and the second pair goeth forth from the middle between the first and second Spondile; and in like manner is the third pair between the second and third Spondile of the Neck, and every Spondile descending hath one pair of Nerves correspondent unto it, either in the Orifice of its fellow, or in the Orifice proper to its self, and the last Spondile *Alhevius*, which is contiguous to the first of the three Bones, *Alhosos*, or *Canda*, hath its pair of Nerves, as likewise the Spondiles above it; but between that and the first of the Spondiles *Alhosos*, is another pair of Nerves, and by reason of that doubled pair there are thirty one pair, and one Nerve unfellowed; because by descending between the first Spondile and the second there is one pair, and between the second and the third there is also one other pair, but from the last Bone which is properly called *Canda*, goeth forth

forth one Nerve only; and as so there are thirty Spondilestrue and not true, and one Nerve without a fellow.

Their Colligancy is better known from whom than to whom, and they have Colligancy with the greatest part of members having motion; their situation and quantity appears, as also their number; the helps of those Nerves are to give motion and sense; they suffer passions of all sorts.

From the aforesaid things doth appear, that in a mans body there are thirty eight pair of Nerves, and one Nerve, which in all are seventy seven, those two excepted which goe to the Nose for the Olfactive Vertue, which are not commonly termed Nerves, because they are too soft; yet I call them Nerves, in as much as they are the Organs of the sense of Smelling, and as so there are seventy nine, vvhwhereof sixty three come from the *Nuca*, and fourteen from the Brain, or sixteen, the



Mamillary caruncles being reckoned with them; of which it hath been spoken above in the Anatomy of the Nerves of the Brain, which afterwards are terminated to infinite Branches, and Fibers, which sense doth not comprehend, and these are thus,

The Nerves coming from the Brain are seven pair; or eight.

The Nerves of the *Nuca* of the Neck are eight pair.

The Nerves of the *Nuca* of the Back, and of the Ribs are twelve pair.

The Nerves of the *Nuca* of the Reins, or *Alkatim* are five pair.

The Nerves of the *Nuca* of *Albovinus* are three pair.

The Nerves of the *Nuca* of *Albosos*, with the two Nerves, between the Spondiles *Albosos*, and *Albovinus*, are three pair, and one odde Nerve going forth from the *Canda*.

The

*The Figure of the Spondiles  
and Nerves.*

**I**N this Figure you may easily see the number of the Spondiles, and you see how from the substance of the first Spondile doe goe forth two Nerves, from either side one, and you may note the number of the Nerves in the extremity of the lines placed in that Figure.

Yet note (Reader) that the Figure hath not a true similitude with the Spondiles, except in number, but their true Figure is seen in the true Spondiles dried in Church-yards.

*Of the Anatomy of the Hands.*

*Manus a  
manando  
quod ex  
Brachiis  
minet, vel  
quod hoc in-  
strumento  
potissimum  
actiones  
e nobis e-  
manant.*

**T**He aforesaid things being seen, I doe first come to the Veins of the Hands used to bee Flebotomised; with which also we shall see the Cartilages, the Marrow, the Bones, and the Nayls, the Muscles of such members being let alone, which

which in a common dissection are not shewen ; yet the knowledge of Muscles is a very great help in Chirurgery, witnesse *Aver. primo colliget*, and therefore becaule for the present they cannot be shewen, we will place in the end of the Book certain Figures shewing some Muscles, especially the outmost ; we will also place Figures shewing the principal bones.

First therefore doe occur two members placed on the sides, which from the shoulders even unto the extremity of the Fingers are of *Galen* called the great hands; these members ( for the present ) have three parts.

The first part beginning from the top is commonly called *Adjutorium*, above which is the *Spatula*, which also of some is placed in the great hand.

Under the first part called *Adjutorium*, is the second called *Brachium*, and between these is the juncture called *Cubitus*, but commonly *Brachium* is taken of many for that first and second part aforesaid, Un-

Under the second is the third part called the little hand, and it is properly called *Mannus ab emanando, quia ab ista parte fere omnia artificia emanant*; because almost all Handy-crafts doe flow from that part.

Between that and the second is one juncture compounded of very many Bones, called in *Arabick Raseta*, and *Ascam*, and in *Greek* *αεπρος*.

Those things being noted, you shall excoriate the whole skin of the great hand with diligence from the Neck even unto the ends of the Fingers; and you shall see, first the Vein *Basilica*, that is *Regia*, or Kingly; the Ancients before *Aristotle* did call that Vein *Jecoraria*, and it keepeth that name yet, because it is commonly called *Vena Hepatis*, the Liver Vein; it is also called *Ascellaris*, or *Axillaris*, because as it appeareth above in the Anatomy of the Veins, this Vein passeth by the *Ascella*, for *Ascella* is that hollow place on both sides, which is under the shoul-



shoulders in the lateral part, between the upper part of the Brest, and the top of the *Adjutory*, which because it hath no vent in many doth savour ill; for it is not vented, witness *Aristotle* in his *Problema*; in these places is a notable part of glandulous flesh, which receiveth some excrements of the Heart, as likewise the kernels which are about the *Inguina*, and in the Neck about the *Guidez*, not much distant from the Ears, which receive the superfluities of the Liver and Brain; and those places are called the Emulstories of the Heart, of the Liver, and of the Brain; and those fleshes are as it were a mattress to the great Veins placed about them.

This Vein called *Ascellaris*, and *Basilica*, descendeth by the inside and lowest part of the Arm, with the Artery fellow to it for a certain distance; after that the Vein is notably manifested alone about the juncture of the Cubite in the inward part; and there is flebotomised, and helpeth principally for the

the Diseases of the Brest, because it is immediately united to the Veins nourishing its parts.

But from the Neck, by the outside, there doth pass from the houlders to that Juncture, by the *Adjutory*, one Vein called *Spartaris*, *Humeralis*, and *Cephalica*, which also about the Juncture of the Cubite is flebotomised, which principally helpeth for Diseases of the Head and Neck, because it is immediately united to the Veins *Guidex*.

Between them is one Vein eaching over-thwart from the one to the other, from which it receiveth blood indifferently; this is called *Nigra*, *Communis*, and *Media*, because it emptieth from the members of the Head and Brest, and consequently from the whole upper part, by which means it doth also empty from the lower parts.

And the *Cephalica* descendeth alone for the most part, directly even unto the little hand, between the fore-finger and the thumb, and

and is called of *Albucasis*, and of *Rasis*, and also of me, the true *Funis Brachii*, and of *Cauliacus*, and of *Canamusalus* it is called *Cephalica ocularis*.

This being cut helpeth in Diseases of the Head, by reason of its Colligancy with the aforesaid *Cephalica*, and also by reason of its directness.

But the *Basilica* descending also alone almost unto the hand, by the inside, and lower, is obliqued toward the out-side about the little hand, which sendeth forth branches from it between the little and the Ring-finger, and this being incised emprieth from the Brest by means of the aforesaid *Basilica*.

Between those two Veins of the little hand, there are (for the most part) some Branches between the fore-finger and the middle, and between the middle and the Ring-finger, which incised stand instead of the common Vein; but the branch which is between the fore-finger and the middle, doth  
more

more participate with the *Cephalica*, and that which is between the middle and the Ring-finger doth more participate with the *Basilica*; and from the *Cephalica* above the Cubite by the out-side of the arm, doth descend one Vein named also of many *Funnis Brachii*, which for the most part is terminated in the aforesaid Veins being on the sides of the middle finger; and this *Funnis Brachii* is not in use for flebotomy, yet it may be incised in case of necessity, and it would carry from the Head, because it is continued with the *Cephalica*.

There doth also often arise from the common Vein, which is in the bending of the Cubite, one branch which doth descend alone on the outside of the branch of the aforesaid *Cephalica*, between the thumbe and the fore-finger, and therefore some have affirmed, that that branch incised doth help in the Diseases, in which the aforesaid common Vein doth help.

Many

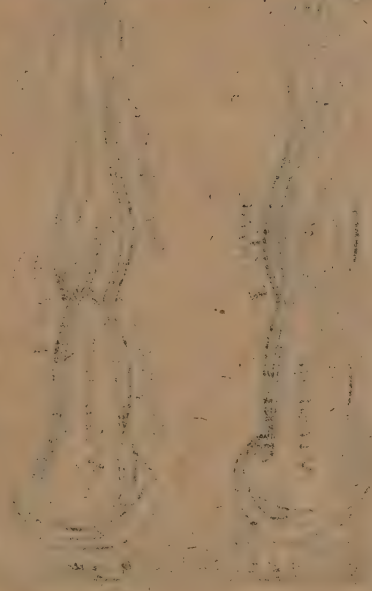


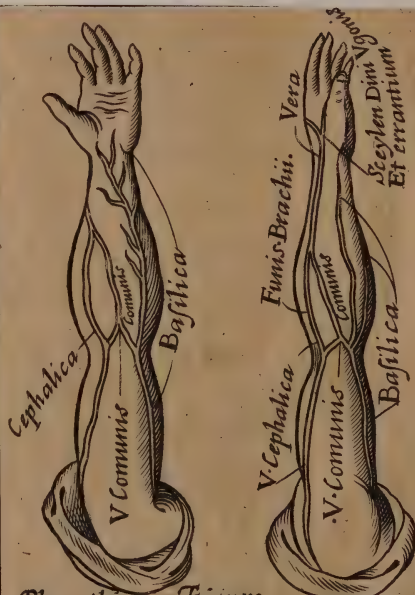
Many times also there doth not any Vein descend from that common Vein between the Fore-finger and the Thumb, and this I have often noted; not only in that, but in many other Veins I have seen them, and also Arteries, to differ their situation, and in some individual their branches are deficient, and in some superfluous.

Many times also there is a branch between the Fore-finger and the Thumb, compounded of a branch of the *Cephalica*, and a branch of the Common Vein, and then it emptieth from the Common Vein, and from the *Cephalica*, and more from the *Cephalica* than from the Common, by reason of its greater directness; for the directness of the Veins to the Members doe make much for evacuations, witness *Galen* in his Book *De Phlebotomia*.

And these things for the present doe suffice for the Veins of the Hands, for the well-seeing of which the Figures placed below are

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Place this Figure  
between .352. and .353. pages

are to be considered, in which are seen the situations; and some names of the principal Veins; the Figures follow.

*The first Figures of Veins.*

**H**ere you see in one Figure the *Vena à* true *Funis Brachii*, reaching *veniendo*; directly from the Shoulder even *quod per* unto the Fore-finger, and the *cam san-* Thumb; which in the little hand *guis ve-* is called *Salvatella* of *Mundinus*, *nint, vel* and of *Dinus*, and of *Ugo*, and of *à via*, & their followers *Sceilen*, which is *no, quod* counted of *Avicen* for one branch *via sint* of the Common Veins; and you *natantis* see in both the Figures how the *sangui-* *Basilica* is in the nearest part of the *nis.* arm, and nourisheth it, and how from that, one branch goeth oblique toward the left part of the hand near the Juncture, and goeth between the little Finger and the Ring-finger, and is called *Ascellaris*, of *Galen*, and of his followers, because it is a branch of the *Ascellaris*, or *Basilica*; and that branch between the little and the

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Ring-

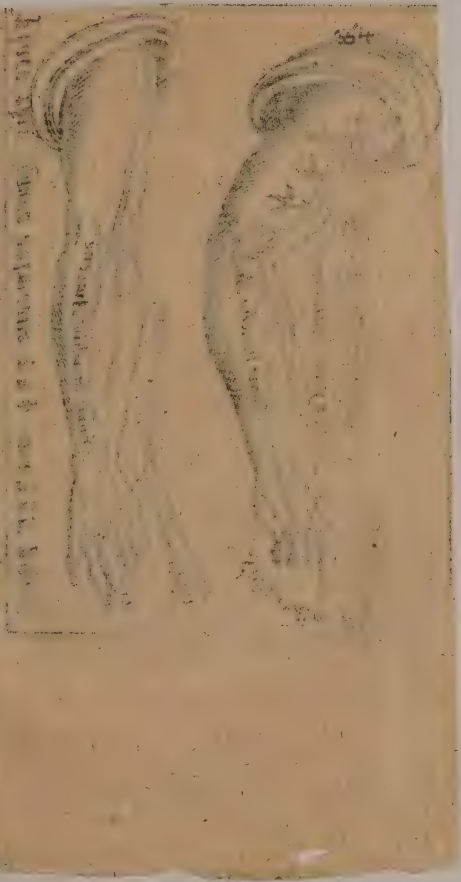


Ring-finger, you shall see in the following Figure; you see also in those two Figures, the common Vein, which is a branch between the *Cephalica* and the *Basilica*, or *Ascellaris*; and you see how from the Common Vein one branch entreth into that branch of the Vein *Cephalica* descending, which is terminated between the Fore-finger and the Thumb, which of *Albucasis* is called *Funis Brachii*; and also of others, as it appeareth above.

*The second Figures of  
Veins.*

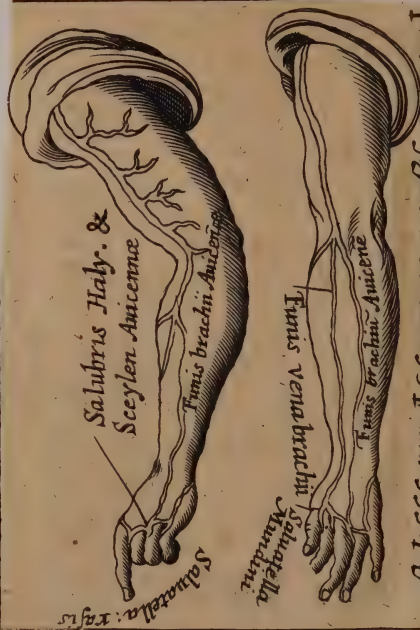
**I**N these Figures is seen the place of the *Salvatella* of *Mundinus*, and the place of the *Salvatella* of *Rasis*, and the place of the *Scei-len* of *Avicen*, and the place of the *Salubris* of *Haly*, and the place of that branch of the *Basilica* which is terminated between the little and the Ring-finger, which Vein *Rasis* called *Salvatella*, and it is seen how that Vein which is called *Fu-*

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*nis Brachii*, of *Avicen*, is terminated about the middle Finger, in a branch of the Vein which is called *Sceilen* of *Avicen*, and *Salubris* of *Haly*; in this Figure also is seen how the true *Funnis Brachii* is a branch of the *Cephalica*, which is terminated between the Fore-finger and the Thumb; and in these Figures, and also in the other Figure, are drawn certain small branches which are dispersed through the muscles of the Arms and Hands, and every Vein of our body hath them, which at length are terminated to Capillary Veins, and although every Vein drawn in those Figures hath them not, yet it maketh no matter.

The Veins being seen at least in one hand, because that is enough, all its Bones are to bee laid bare, with which also the *Spatula* is to be seen, made, that the hand might be sustained of it, and lest otherwise the *Adjutory* should be continued with the Brest, because then the facility of the operation of the



hands one to another should bee destroyed, and there should be caused a straightning; and it was separated from the Ribs, for its strong motion; and because being so placed, it might the better defend the members of the Brest toward the hinder part; and it was on the sides, lest in its motion it should meet with the Spondiles, toward which it is thin, and broad as a Splatter, and therefore it is called *Spatula*; its part toward the *Adjutory* is gross, in the head of which is a certain hollownes termed *Pixie*, in which is revolved the upper round extremity of the *Adjutory* called *Vertebrum*.

The *Os Spatula* there hath two additaments, one is at the top and behind, which is fastned with the upper *Furcula* of the Brest, and is called *Rostrium corvi*, the Crows bill; whose help is to hinder, lest the *Adjutory* should bee moved from its place to the upper parts; the other of the said additaments is within and below, which also doth hinder the dislocation of the *Adjutory*. This

This Bone upon the back of it hath a triangular substance, whose *Basis* is toward the hinder part, and its eminence is toward the inside, the superficial part of the back should be raised into a sharp point, and should easily be hurt, in the extremity of which there is a Cartilage.

Mark, that a Cartilage is twofold; one which is altogether softer than the Bone in any other part of a living Creature, and this in the broader extreme of the one *Spatula*, and in the Breast, and in the *Epiglottis*, and also elsewhere in many places; there is also another Cartilage harder than that, which nevertheless is softer than a Bone, and this is in the extremities of the Bones of the great junctures, which of *Avicen* is called *Alaguahic*; this cleaveth immediately to the substance of the bones; but the other Cartilage in the aforesaid Junctures cleaveth to that *Alaguahic*; and to the aforesaid softer Cartilage, the Ligaments in the Junctures doe afterwards

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immediately cleave, fastning the bones together ; and these things are best seen in bones boyled to the uttermost.

The *Scapula* being seen, see the *Os Adjutorii*, which is the greatest of the Bones of the Hand, whose shape is known to all, somewhat crooked, in whose hollownes, as in many other bones, there is Marrow, called *Medulla*, *quia est in medio ossium* ; because it is in the middle of the bones.

For Marrow { witness *Aristotle*, *secundo de partibus animalium*) is a nourishment of Bloud, and it is a concocted and contained excrement ; and ( *Avicen* *prima primi* saith, ) that the bones are nourished of it ; and hence is Nature known artificial, which since Shee hath not alwayes Veins fit for the Bones, putteth their nourishment in their Pores and Concavities ; and also if it be a superfluity, Shee likewise putteth the excrement in them, since She hath not another place fit for the aforesaid things.

The lower extremity of the *Adjutory*

*ulnary* Bone hath two eminences, with which it is joyned with the two *Fociles* of the Arm, making with strong Ligaments the juncture of the Cubite; and in the hollownes which is between the aforesaid eminences, doth enter the extremity of the lower *Focile*, which is greater than the upper, which is crooked, that the Juncture might be the more firm for the continual (as it were) and strong motions of this Juncture, which for this cause also is seldom dislocated; and if it bee dislocated, it is with difficulty reduced into its former degree; the *Fociles* of the Arm are also hollow, because all Bones are either hollow within, or porous, that they might bee light, lest they should burthen the body.

And the extremities of those *Fociles*, and of all Bones, and of the Junctures of the Hand and Foot, are grosser than in the middle, because in the extremities there must be great Ligaments for the strength of the junctures, and in



the middle they are small, that they might give place to the Bodies of the Muscles, which must necessarily be many and great, for their many shaped motion.

After the Bones of the Arm are the Bones *Raseta*, or *Carpi*, which are eight, for the multitude of motions, & also for other cause.

Afterward is the little Hand, whose inner part without the Fingers is called *Vola*, and *Palma*, but its outward part is without a name ( witness *Aristotle primo de Histor.* ) Its Bones are four correspondent to the other Fingers, ( the Thumb excepted ) from which is compounded the *Pecten* of the hand, and the *Procarpum*, or *Procarpium*, and *Antecarpum*, and *Metacarpum*, yet there are some that would that the first Bone of the Thumb should be in the *Raseta*, and as so, the Thumb hath not but two bones; some say, that the first Bone of the Thumb is in the *Pecten* of the hand.

After the *Pecten* are the Fingers; First is *Pollex* the Thumb, which hath

hath two bones out of the *Vola*; after that is *Index*, or the pointing Finger next unto it; next to which is *Medius* the middle Finger, longer than the rest; afterward is the Finger called *Medicus*, and *Annularis*, the Physicians, and Ring-finger; after that is the least, named *Auricularis*; these four have three junctures, and three Bones; and also the Thumb in my opinion hath three junctures, and three bones, because I doe not place the first bone serving it, neither in the *Raseta*, nor in the *Pollex*.

In the inner part of the Fingers there is notable flesh, which is a coverlet to the Bones, lest they should bee hurt in their continual meetings of hard things, which they necessarily touch in the operations of the hands; but in the sides of them is less flesh, and less in the outward part, because in those parts they doe not meet with things hurting them in their operations, as within the hand.

The Chords of those Fingers, especially the outermost, doe enter

ter into their juncture above; and every Finger hath a Chord, of which speech is not made for the present, because their Muscles cannot bee seen, whereof some are deep placed in the arm, and some Chords come to the Fingers from the Neck, as wee have more largely spoke of the Ring-finger in our Commentaries upon *Mundinus*.

Therefore in the great Hand there are thirty one Bones (the Bones *Sisamiis* excepted) which fill up some junctures; and first is the Bone *Spaula*, afterwards the Bone *Adjutorium*, after the two *fociles* of the arm, and eight of the *Raseta*, and four of the *Pecten*, and fifteen of the Fingers.

In the end of the bones of the Fingers are the Nayls, whose helps are for the comeliness of the hand, and for the defence of the end of the fingers, and to take up small things; and the Nayls are engendered of superfluities, as also the Hairs, therefore they doe continually encrease, yea in a dead man.

man. From the aforesaid things doth appear the substance of the hands; their situation, number, shape, and Colligancy, and their quantity lye open; their complexion is such as are their parts; their helps cannot bee described, for they are the Organes of Organes; they suffer passions of all sorts.

*Of the Anatomy of the Feet.*

**T**He Hands being seen, see likewise the Feet, at least one, which is enough in that dissection, as also one hand; the Foot therefore is divided into great and small, as also the Hand, witness *Haly* and *Galen*; and the Foot, witness *Haly*, hath four parts, the first part is called *Ancha*, the Hip; the second *Coxa*, the Thigh; the third *Crus*, the Shank; the fourth *Pes parvus*, the little Foot.

And first, the skin of it is to bee excoriated every where from the top to the bottom; in the inward part of which under the skin, is one notable branch of the Vein

*Chilis.*

*Pes Lat.*  
*a Gra.*

πῆς παρὰ  
τὸ πῆ-  
πύδα  
ἀπὸ τῆ  
ὄλῃ

σώματος.

*Quasi in*  
*ipso à to-*  
*to corpo-*  
*re cessa-*  
*tum sit A-*  
*ristotele.*

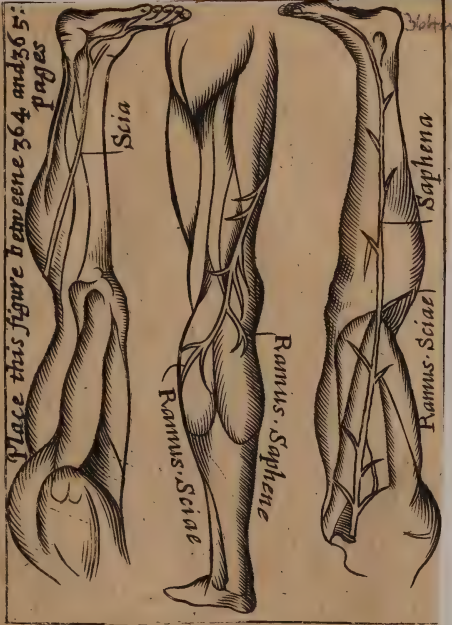


*Chilis*, descending from the *Inguen* by the Thigh, which when it is under the Hamme ( as wee have said above ) is divided into three parts; one doth descend directly by the inside unto the innermost hollowness of the Foot, and this is called *Saphena*, which is cut in divers diseases.

One other is obliquated toward the outside by the calf of the Leg, and descendeth to the forein or outermost hollowness, and this is called *Sciatica*, or *Scia*, which being cut availeth for the pain of the Hip; and the bifurcation of this *Mundinus* knew not, neither his followers; and it may be that this branch doth avail for the pain of the *Sciatica*, because some of its branches are united with the branches of the Veins nourishing the Muscles, and the outward part of the Hip toward the juncture of the *Scia*.

Between those branches in the *Rafeta* of the Foot, are Veins common to both the aforesaid branches; which sometimes are cut,

Place this figure between 764 and 765:  
pages





cut, especially if the other of those two aforesaid may not be found; which hapneth often, because as it appeared above, the Veins doe not keep the same situation, nor number, nor also quantity.

Between the aforesaid *Saphena*, and also the *Sciatica*, under the Hamme, even unto the little Foot, there doth descend one notable branch, which keepeth the middle between these, which may be cut in place of the deficiency of the other aforesaid; in the Figures under written, you shall see the aforesaid Veins, at least the *Saphena*, and the *Sciatica*.

*Here followeth the Figures of the Veins of the Feet.*

**I**N these three Figures you have all the Veins used to bee flebotomised in the Feet, and in that Figure which is in the middle you see how one Vein bigge enough coming from the inner part of the Hippe goeth overthwart, descending, and under the Hamme is divided



vided into two Forks, one branch of which goeth by the inner part of the Foot, or Shank, even unto the little Foot, which is called *Saphena*.

But another Branch goeth by the outer part of the Foot, which is called *Scia*, and those branches as well inward as outward, are seen in the Figures on the sides, which are flebotomised about the ankles, or about the toes of the Feet.

The Veins of the Foot being seen, the Muscles are to be removed wholly from the bones; as also it is done in the Section of the Hand, for the same cause, noting that glandulous flesh about the *Inguen*, which is the emunctory of the Liver, about which doth pass one aforesaid branch of the Vein *Chilis* descending, from which the *Saphena*, and the *Sciatika* Vein are made; and in that flesh the matters over-flowing to the Liver are drunk in, as we have said in another place.

The Muscles being removed,  
the

the Bones of the Foot doe remain,  
of which that which doth first oc-  
cur, from the upper parts, is called  
*Os Ancha*, which Bone is on ei-  
ther side one; these two Bones  
are in the hinder part most firmly  
united to the *Os Sacrum*, or to  
the bones *Albovini*; but in the  
*Pecten* they joyn themselves toge-  
ter, and these two Bones as well  
before as behind, are ( by Gods  
appointment ) opened in Births;  
and these Bones are more crooked  
and large in a Woman than in a  
Man, for the Birth; and these  
Bones have four names, before they  
are called *Ossa Pectinis*, *Penis*, *Pubis*,  
and *Femoris*; and on the hinder  
part they are called *Ossa Ancha*,  
and on the top and before they  
are called *Ossa Ilii*, and *Albartha-  
pha*, and below in the place in  
which there is a hollownes, it is  
called *Pixis*, into which doth en-  
ter the head of the *Os Coxe*, which  
is round on the top, called *Verte-  
brum*; they are called *Ossa Scie*,  
and *Acceptabulum*.

To those two Bones *Ancharum*

in

in the hinder part doe adhere the Buttocks called *Nates à nitendo*, of being neat and comly, and *Sessus à sedendo*, of sitting; in those parts the flesh is thicker than in other members, lest pressing upon it, the soft of the body should be pressed with Bones; and those parts (according to some) have Colligancy with the whole, therefore they say, that *Ventoses* and Horse-leeches applied there are instead of flebotomy; and they are dull of sense, because they are little Nervous; and among other helps they doe perform rest to the body by sitting; they doe also defend the *Anus* from cold; and they are for comeliness, by hiding the place of excrements.

After that Bone or Bones of *Ancha*, doth follow the *Os Coxæ*, being a long concave within, and convex without, and more gross than any other Bone of the body; hollow, that it might be light, in which there is marrow, as also in other great Bones; and the juncture between that Bone

Bone and the *Os Ancha* is called *Scia*; that Bone hath two Additaments above, and two below, but those above are greater, one whereof doth enter into the aforesaid *Pixis* of the *Os Ancha*, in the center of which, besides other Ligaments, it is most firmly united with one ligament, Chordy, round, and hard, lest it should bee easily dislocated.

And their lower additaments are joyned with the two *Fociles* of the Shank, in the former part of which there is a smooth round bone called *Rotula*, and all these bones are fastned together very firmly by Ligaments, and this Juncture is called *Genu* the Knee, whose hinder part is called *Poples* the Ham.

From the Knee to the little Foot is the Legge, whose former part is called *Crea*, and the hinder part *Sura*, in that part are the two aforesaid Bones which are called *Focilia*, *Arundines*, *Colla*, *Tibia*, and *Canna*; those two *Fociles* doe differ in quantity, for the bone placed in the inner part, is longer;

B b

and



and more gross than that which is placed in the further ; and the lesser is not joyned with the bone of the Hip, but cleaveth to the great *Focile* below the Knee, that it might strengthen it, and that it might keep it straight.

Those two *Fociles* toward the bottom, are terminated to one Bone of the little Foot, which is gross enough, named of *Avicen* *Os Cahab*, at the sides whereof the two aforesaid *Fociles* doe make that eminence on either side which are called *Cavilla* the Ankles ; and of all these is ordained the greater of the junctures of the little Foot.

The Foot also hath a concavity below, and a convex part above, which is called *Mons*, and *Altum pedis*; and the whole Foot is compounded of many bones, whereof that which first occurreth is the aforesaid *Os Cahab*, under which is *Os Calcanei* the Heel-bone, which as one stands is declining toward the bottom ; before the *Os Cahab* is one Bone called *Naviculare*, af-

ter that four Bones of the *Raseta*, to which toward the out-side is united one Bone of the *Sisaminum*, after that five Bones of the *Peeten* of the Foot; then are fourteen bones of the Toes; in the middle juncture of the great Toe are seen also two Bones, *Sisamia*, or *Sisamina*, so called because they are like to the graines of *Sisamum*.

And the Chords extending the Toes begin in the Shin, and those contracting them are in the sole of the Foot, which Chords with their Muscles cannot well be seen but in bodies consumed in the water, or dried in the Sun.

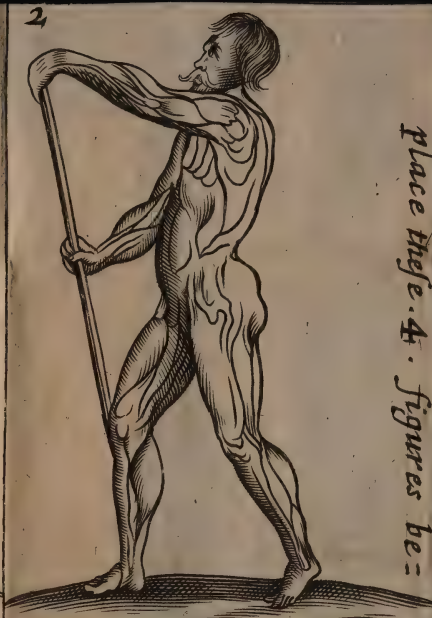
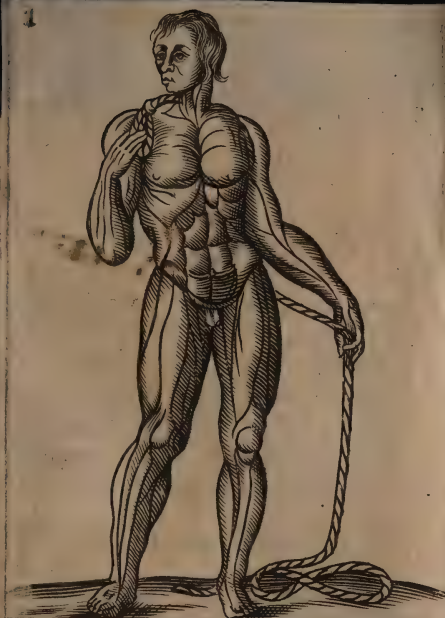
In the extremity of the bones of the Toes are also the Nayls, the helps of whom are those which are in the Hands, this excepted, that they are not for the taking up of small matters.

From the things done before is to be seen the substance of the Feet, in which also are Cartilages, *Albagnabic*, and Arteries, as in the hands; their situation, shape, quantity, Colligancy, and number appear;

pear ; their complexion is such as is the complexion of Organical members ; their helps are to change the place, and to carry the upper parts to the will of the Soul as far as they can : they suffer passions of all sorts ; the Figures of the Muscles and of the Bones doe follow.

*The first Figure of Muscles.*

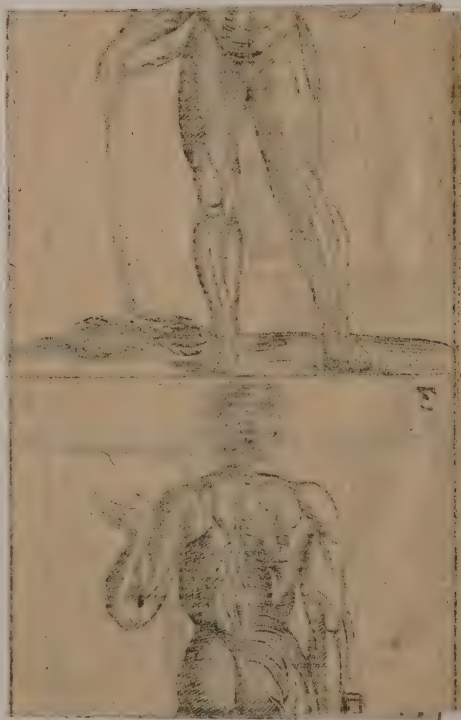
**T**His is a Figure which resembleth a Man flead from the skin, in which are seen the shapes of the outward Muscles of the former part of a man, by which Physicians are helped in knowing the Heads, and also the middle parts of the Muscles, that thereby they might the better know to Prognosticate of Wounds, Ulcers, and Apostumes, and that also they might know to make the incision of Ulcers, and of Wounds, and other Chirurgical operations, without the hurt of the Chords, which are the heads of the aforesaid Muscles.



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*The second Figure of Muscles.*

**I**N this Figure are seen the outward Muscles on the sides of a mans body, from which Physicians are made cautious in Prognosticating Apostumes, Ulcers, and Wounds, and in Incision, and in other Chirurgical operations.

*The third Figure of Muscles.*

**T**HIS is a Figure in which are seen all the Muscles behind, placed immediately under the skin, which doth perform the aforesaid helps to Physicians, and those Figures doe also help Painters in the drawing of members.

*The first Figure of Bones.*

**I**N this Figure are seen the forms, and situations, and also the true number of all the Bones of a mans body, except the bones of the head, and also the bones of the back; all the junctures of which cannot be

seen, unless in bodies boyled, or dried in Church-yards.

*The second Figure of Bones.*

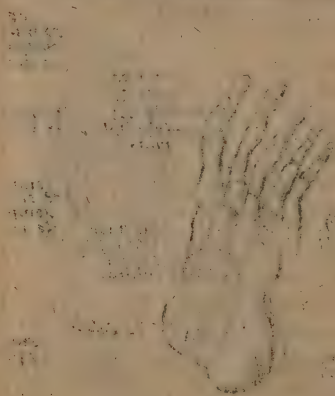
**I**N this Figure are seen the bones of the hinder part of a man; there are also seen two Skuls, in the right of which is seen the Coronal Commissure which is in the upper part, & the *Sagittalis* is seen which is in the middle, the Commissure of *Lauda* is also seen, which is in the lower part on the sides; there are also seen the two Commissures named of me above in the Anatomy of the *Craneum*, which are above the Commissures *Squamosas* being neer the Ears, but they are almost not to bee perceived; on the left side is another Skull, in which are seen the Mandibles, and part of the Coronal Commissure, and two Commissures below, the *Sagittalis* being on one side, and there is seen one bone of the two *Offa Paris* which is from the region of the Eye, or from the Bone called *Domum Faciei*, reaching

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37. *Handwritten text, likely a title or description, partially obscured by ink bleed-through from the reverse side.*



ing through the breadth of the Head toward the Ear.

*The third Figure of Bones.*

**Y**OU have in this Figure the number, shape, and situation of the Bones of the Hand and Foot; in the Hand are the extremities of the two *Fociles* of the Arm, and eight Bones of the *Rasetta*, and four of the *Pecten*, and fifteen of the Fingers.

In the Foot you have the *Os Calcanei*, and the *Os Cubab*, and *Os Naviculare*, and four bones of the *Rasetta*, and five Bones of the *Pecten*, and fourteen Bones of the Toes.

These are those things which for the present wee have given to our Scholars for common Anatomy, for the end whereof let him be praised which is three and one, whom I most humbly entreat that hee may direct mee to greater matters. *Amen.*

And hee which is not content with these, let him have recourse

to our most wholsome Commentaries upon *Mundinus*. Fare ye well in the Lord, yee which gather the Flowers of our Art after the manner of Bees; for wee doe reject the outragious Reader, the rest wee entreat and reverence: once more farewell.

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**F I N I S.**

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